

# DOCUMENT RESUME

ED 064 523

VT 016 150

AUTHOR Pucel, David J.; Nelson, Howard F.  
 TITLE General Aptitude Test Battery. Training Success Norms and Employment Success Norms. Project MINI-SCORE, Final Technical Report.  
 INSTITUTION Minnesota Univ., Minneapolis. Dept. of Trade and Industrial Education.  
 SPONS AGENCY Office of Education (DHEW), Washington, D. C. Div. of Comprehensive and Vocational Research.  
 REPORT NO R-3  
 PUB DATE Mar 72  
 NOTE 71p.  
 EDRS PRICE MF-\$0.65 HC-\$3.29  
 DESCRIPTORS \*Aptitude Tests; \*Group Norms; Occupational Clusters; \*Predictive Ability (Testing); Profile Evaluation; Prognostic Tests; Standardized Tests; \*Success Factors; Tables (Data); Technical Education; Vocational Adjustment; \*Vocational Counseling; Vocational Education  
 IDENTIFIERS GATB; General Aptitude Test Battery; Project MINI Score

## ABSTRACT

Presented in this document are "training success" norms developed from data on post-secondary vocational education students as collected by means of the General Aptitude Test Battery (GATB) from students accepted to and graduated from full-time day programs in the 24 cooperating Minnesota schools from September 1966 - July 1970. Included is information on: (1) Project MINI-SCORE Occupational Training Program Groups, (2) Aptitude Score Profiles, Training Success Norms, (3) Aptitude Score Profiles, Employment Success Norms, (4) Aptitude Score Means, Standard Deviations and Number of Observations for Groups Used In Preparing Training Success Norms, (5) Aptitude Score Means, Standard Deviations, and Number of Observations for Groups Used In Preparing Employment Success Norms, and (6) Student Profile Sheet--GATB Aptitude Score. Also included is information on using the prepared profiles in counseling situations. Related documents are available as VT 016 148, VT 016 149, VT 016 151, and VT 016 152. (JS)

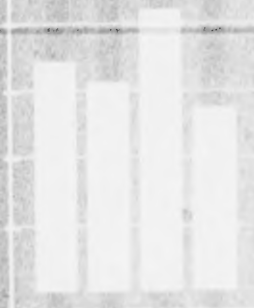
ED 064523

# PROJECT MINI-SCORE FINAL TECHNICAL REPORT

## GENERAL APTITUDE TEST BATTERY Training Success Norms and Employment Success Norms



NT016150



PROJECT MINI-SCORE FINAL TECHNICAL REPORT:

GENERAL APTITUDE TEST BATTERY  
TRAINING SUCCESS NORMS AND  
EMPLOYMENT SUCCESS NORMS

U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

by  
David J. Pucel  
Associate Professor  
Department of Industrial Education  
University of Minnesota  
Project Director

Howard F. Nelson  
Professor and Director  
Division of Vocational and Technical Education  
University of Minnesota  
Principal Investigator

The research reported herein was performed pursuant to a grant with the Division of Comprehensive and Vocational Research, Office of Education, U. S. Department of Health, Education, and Welfare. The formal project name is "The Characteristics of Full-Time Students in Post-Secondary Trade Schools," U.S.O.E. project No. HRD 5-0148. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

Project MINI-SCORE  
(Minnesota Student Characteristics and  
Occupationally Related Education)  
Department of Industrial Education  
University of Minnesota  
March, 1972

## FOREWORD

This technical report is one of the technical reports of Project MINI-SCORE which summarize the findings of six years of intensive research into possible relationships between standardized test measures and a number of different criteria of vocational student success. The technical reports present a detailed discussion of Project findings. A general discussion of the major findings can be found in the publication entitled PROJECT MINI-SCORE FINAL REPORT.

Through Project MINI-SCORE, test data consisting of measures derived from six separate instruments and test batteries were gathered on individual applicants to the area vocational-technical schools of Minnesota. The tests included in the battery were: (1) the General Aptitude Test Battery (Form B) written portions only, (2) the Minnesota Vocational Interest Inventory, (3) the Sixteen Personality Factor Questionnaire (Form C), (4) the Minnesota Importance Questionnaire (30-scale version), (5) the Vocational Development Inventory, and (6) the Minnesota Scholastic Aptitude Test. In addition, personal descriptive data were obtained from the students through the use of a questionnaire. The data from these instruments were analyzed to determine which of the information gathered would be useful in counseling individuals with reference to full-time, post-high school vocational-technical courses offered in the area vocational-technical schools of Minnesota. Measures of vocational student success included in the Project were: (1) reported graduation versus dropping out of programs, (2) employment status one year after graduation, (3) job satisfaction one year after graduation, and (4) job satisfactoriness one year after graduation.

The titles of all of the final technical reports of the Project can be found on the back cover of this report. Additional publications of Project MINI-SCORE which have dealt with some of the critical issues in vocational education research are listed on the last page. Limited numbers of copies of these reports are available.

David J. Pucel  
Associate Professor  
Department of Industrial Education  
University of Minnesota

## TABLE OF CONTENTS

|                                                                                                                                                                                                   | Page       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| FOREWORD . . . . .                                                                                                                                                                                | 1          |
| THE GENERAL APTITUDE TEST BATTERY (GATB, B-1002) AND<br>ITS USE BY THE EMPLOYMENT SERVICE . . . . .                                                                                               | 1          |
| Development<br>Tests and Aptitudes Measured<br>Use by United States Employment Service                                                                                                            |            |
| DEVELOPMENT OF PROJECT MINI-SCORE TRAINING SUCCESS NORMS AND<br>EMPLOYMENT SUCCESS NORMS . . . . .                                                                                                | 4          |
| Occupational Groups and GATB Aptitudes Included in the<br>Study<br>Training Success Norms Population and Occupational<br>Groups<br>Employment Success Norms Population and Occupational<br>Groups |            |
| INTERPRETING THE NORMS . . . . .                                                                                                                                                                  | 6          |
| Description of the Profiles<br>Preparing the Profiles for Counseling<br>Using the Prepared Profiles in Counseling                                                                                 |            |
| REFERENCES . . . . .                                                                                                                                                                              | 10         |
| APPENDIX A: PROJECT MINI-SCORE OCCUPATIONAL TRAINING<br>PROGRAM GROUPS . . . . .                                                                                                                  | 11         |
| APPENDIX B: APTITUDE SCORE PROFILES, TRAINING SUCCESS NORMS . . . .                                                                                                                               | 14         |
| APPENDIX C: APTITUDE SCORE PROFILES, EMPLOYMENT SUCCESS NORMS . . .                                                                                                                               | 42         |
| APPENDIX D: APTITUDE SCORE MEANS, STANDARD DEVIATIONS AND<br>NUMBER OF OBSERVATIONS FOR GROUPS USED IN PREPARING TRAINING<br>SUCCESS NORMS . . . . .                                              | 56         |
| APPENDIX E: APTITUDE SCORE MEANS, STANDARD DEVIATIONS, AND<br>NUMBER OF OBSERVATIONS FOR GROUPS USED IN PREPARING EMPLOYMENT<br>SUCCESS NORMS . . . . .                                           | 61         |
| STUDENT PROFILE SHEET--GATB APTITUDE SCORE . . . . .                                                                                                                                              | 64         |
| OTHER PROJECT MINI-SCORE PUBLICATIONS. . . . .                                                                                                                                                    | 65         |
| VOLUMES OF PROJECT MINI-SCORE FINAL REPORT . . . . .                                                                                                                                              | back cover |

THE GENERAL APTITUDE TEST BATTERY (GATB, B-1002)  
AND ITS USE BY THE EMPLOYMENT SERVICE<sup>1</sup>

Development

The General Aptitude Test Battery was developed primarily to be used for the evaluation of occupational potentialities. Prior to its development, the United States Employment Service (USES) experimentally developed approximately one hundred separate tests to measure the various abilities that seemed related to success in different occupations. Each time the study of a different occupation was undertaken, new tests were devised if the job analysis of the occupation indicated that some ability seemed to be important and the present store of USES tests did not already include such a test. Each test was constructed with items that were as homogeneous as possible with regard to the abilities they seemed to measure and varied in difficulty. Over a period of time, many tests were developed composed of items such as arithmetic, vocabulary, and form perception. In addition, certain apparatus tests were developed. Through the process of factor analysis, eleven paper and pencil tests and four apparatus tests were selected from the original group of tests as the best measures of ten factors or abilities. These tests formed the first edition of the GATB, B-1001. Thus, through the development of the GATB, it became possible to measure most of the major abilities represented in the entire stock of USES tests which were related to many jobs.

The present form of the GATB, designated as B-1002, is the original GATB converted to a separate answer sheet form that includes twelve tests measuring nine aptitudes. Two forms of the B-1002 edition are available (Form A and Form B) with different answer sheets, scoring stencils, and aptitude score conversion tables. The two forms differ only in the sampling of items in parts one through seven.

Tests and Aptitudes Measured

The following tests and the aptitude or aptitudes measured by each are included in the GATB, B-1002, forms A and B.

Part 1 - Name Comparison

The examinee inspects the names appearing in two adjacent columns of names and indicates whether the names are the same or different. Measures Clerical Perception.

Part 2 - Computation

The test consists of arithmetic exercises requiring the addition, subtraction, multiplication or division of whole numbers. Measures Numerical Aptitude.

---

<sup>1</sup>The information in this section was abstracted from: Manual for the General Aptitude Test Battery: Section III Development, United States Department of Labor, Washington, D. C., October, 1967.

**Part 3 - Three-Dimensional Space**

The examinee is given a two-dimensional stimulus figure containing bent lines and four three-dimensional response figures. The examinee indicates which of the four response figures can be made from the stimulus figure. Measures Intelligence and Spatial Aptitude.

**Part 4 - Vocabulary**

The examinee is given sets of four words and must indicate which two words of each set have either the same or opposite meanings. Measures Intelligence and Verbal Aptitude.

**Part 5 - Tool Matching**

Examinee is given a stimulus drawing and four black and white response drawings and must indicate which black and white drawing is the same as the stimulus drawing. Measures Form Perception.

**Part 6 - Arithmetic Reasoning**

Examinee must solve verbally expressed arithmetic problems. Measures Intelligence and Numerical Aptitude.

**Part 7 - Form Matching**

Examinee is given a stimulus and response group of variously shaped line drawings. He must indicate which response figure is exactly the same size and shape as each figure of the stimulus group. Measures Form Perception.

**Part 8 - Mark Making**

Examinee must draw two vertical and one horizontal line beneath the two vertical lines on a series of squares working as rapidly as possible. Measures Motor Coordination.

**Part 9 - Place**

Examinee moves two pegs simultaneously, one in each hand, from an upper pegboard area to corresponding holes located in the lower area of the same pegboard in three timed trials. Measures Manual Dexterity.

**Part 10 - Turn**

Using the lower section of the pegboard, the examinee removes a peg, turns it over and places the opposite end of the peg into the hole from which it was removed using his preferred hand. Three timed trials are given. Measures Manual Dexterity.

**Part 11 - Assemble**

The examinee is given rivets, washers, and a finger dexterity board. Using his preferred hand, he removes a rivet from the upper segment of the board, assembles a washer on the rivet, and places the assembly in the corresponding hole in the lower segment of the pegboard. One timed trial is given. Measures Finger Dexterity.

**Part 12 - Disassemble**

The examinee is required to disassemble completed assemblies of rivets and washers in a manner opposite to those actions required for Part 11. One timed trial is given. Measures Finger Dexterity.

The nine aptitudes measured by the GATB B-1002 and the definitions of these aptitudes are stated below. The letter symbol used to identify the aptitude precedes each aptitude name.

**Aptitude G - Intelligence**

General learning ability. The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments. Closely related to doing well in school. Measured by Parts 3, 4, and 6.

**Aptitude V - Verbal Aptitude**

The ability to understand the meaning of words and to use them effectively. The ability to comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. Measured by Part 4.

**Aptitude N - Numerical Aptitude**

Ability to perform arithmetic operations quickly and accurately. Measured by Parts 2 and 6.

**Aptitude S - Spatial Aptitude**

Ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space. Measured by Part 3.

**Aptitude P - Form Perception**

Ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and to see slight differences in shapes and shadings of figures and widths and lengths of lines. Measured by Parts 5 and 7.

**Aptitude Q - Clerical Perception**

Ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation. Measured by Part 1.

**Aptitude K - Motor Coordination**

Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and swiftly. Measured by Part 8.

**Aptitude F - Finger Dexterity**

Ability to move the fingers and manipulate small objects with the fingers, rapidly or accurately. Measured by Parts 11 and 12.

**Aptitude M - Manual Dexterity**

Ability to move the hands easily and skillfully. Ability to work with the hands in placing and turning motions. Measured by Parts 9 and 10.

**Use by United States Employment Service**

GATB norms have been determined for adults and for high school grades 9 and 10. They have been established to appraise the aptitudes required in a large

variety of occupations. Employment Service individual occupational norms for the GATB are classified in terms of an Occupational Aptitude Pattern (OAP) structure. The OAP norm structure includes various combinations of the nine aptitudes measured by the GATB B-1002. These norms (OAP's) have been validated on the basis of data collected on various occupational groups. Each OAP for a given occupation or group of occupations having similar aptitude requirements consists of the most significant aptitudes and minimum cut-off scores on these aptitudes. Individual performance on the GATB is evaluated in terms of the OAP's through the use of conversion tables.

Although the validity of the GATB has been established for many current occupational fields, there still remain many emerging occupations for which occupational norms have not yet been established. Test and occupational data are continually being obtained and additional occupations are being added to the norm structure while outdated norm structures are being removed.

The GATB tests and aptitudes possess substantial correlations with other tests which sample the same abilities. For example, the Spatial Aptitude of the GATB has high correlations with the spatial components of the DAT, the Primary Mental Abilities and the Revised Minnesota Paper Form Board. The GATB Verbal Aptitude correlates highly with the DAT Verbal test and Vocabulary subtest of the Cooperative English Test. Many of the correlations between these similar ability tests exceed .70.

Correlations are quite low in studies in which the GATB aptitudes are correlated with the Minnesota Vocational Interest Inventory or the Kuder Preference Record.

Further information regarding the Occupational Aptitude Patterns and the GATB correlations with specific tests can be found in the Manual for the General Aptitude Test Battery, Section III: Development (1967).

Reliability studies have been conducted with the GATB under test, retest conditions with the second testing usually producing an increase in aptitude test scores. Results of these studies, however, indicate that the aptitudes of the GATB are measured reliably in the types of situations in which the battery is commonly used. These studies were conducted with samples from high school, college, and adult populations using test, retest intervals ranging from one week to one year. Reliability coefficients for most of the aptitudes were in the range from .80 to .90. A practice effect was consistently observed for all aptitudes. The mean score increases often exceeded 10 points for some aptitudes, a fact which should be noted by persons who may be involved with interpreting retest scores.

#### DEVELOPMENT OF PROJECT MINI-SCORE TRAINING SUCCESS NORMS AND EMPLOYMENT SUCCESS NORMS

##### Occupational Groups and GATB Aptitudes Included in the Study

Project MINI-SCORE has gathered data on sixty-three different occupational training program groups. The training programs were grouped by personnel from the Minnesota State Department of Vocational Education and the Department of Industrial Education at the University of Minnesota into relatively homogeneous groupings. In many cases the specific titles given to training programs in a

given group are different but the training programs are relatively the same. Each of the group names and the specific titles of training programs falling into a group can be found in Appendix A.

Due to test administration time limitations and previous research which questioned the blanket use of manipulative performance tests, only the written portions of the GATB were used in the study. Both Ghiselli (1966) and Prediger (1968), after reviewing many studies concerned with predicting adult and high school vocational training program success respectively, questioned the blanket use of manual dexterity and motor ability tests in vocational counseling.

#### Training Success Norms Population and Occupational Groups

The "training success" norms (see Appendix B) in this report were developed with data obtained from student who were accepted to and graduated from full-time, day programs offered in the twenty-four cooperating post-high school area vocational-technical schools of Minnesota during the period from September 1, 1966, until July 1, 1970. Aptitude score profiles have been prepared only for those occupational groups for which at least forty-nine individual sets of data were available. The actual sample used in developing each norm profile is indicated in Appendix D.

The initial printing of the Project MINI-SCORE General Aptitude Test Battery (B-1002 Form B) Training Success Norms (Pucel and Nelson, 1969) contained data on eleven different occupational groups. Supplement One (Pucel and Nelson, 1970) added seven additional groups. The present publication includes twenty-seven occupational groups. The twenty-seven groups have been separated into three clusters on the basis of sex. This classification system is based on Project MINI-SCORE research which showed differences on many of the measures included in the Project MINI-SCORE test battery which were due to sex (Pucel and others, 1972a; Pucel and others, 1972b).

#### CLUSTER I

##### PRIMARILY MALE CURRICULA

Agri-Technology  
Aircraft Mechanics  
Architectural Drafting  
Automotive  
Carpentry  
Chefs and Cooks  
Diesel Mechanics  
Electronics  
Farm Equipment Mechanics  
Fluid Power Technology  
Machine Shop  
Mechanical Drafting and Design  
Mechanical Refrigeration, Air  
Conditioning and Appliance Repair  
Plumbing and Sheet Metal  
Power and Home Electricity  
Printing and Graphic Arts  
Welding

#### CLUSTER II

##### CURRICULA WITH BOTH MALES AND FEMALES

Accounting  
Data Processing  
Interior Design and Sales Assistant  
Sales

#### CLUSTER III

##### PRIMARILY FEMALE CURRICULA

Clerical Training  
Cosmetology  
Dental Assistant  
Medical Laboratory Assistant  
Practical Nursing  
Secretarial Training

### Employment Success Norms Population and Occupational Groups

The "employment success" norms (see Appendix C) were developed on a subset of the population used for training success norms. The population included persons who were accepted to and graduated from the full-time, day programs of the twenty-four cooperating schools and who were followed up on the job one year after training between September 1, 1966 and July 15, 1970. Of the people who were followed up on the job, only those who were employed in a job related to their training (based on the Project MINI-SCORE classification presented in Appendix A) were included in the groups used to generate the employment success norms. (The "employment success norms" in this report could also be called "on-the-job norms".) Aptitude score profiles have been prepared for all occupational groups for which at least fifty individual sets of data were available. The actual sample used in developing each norm profile is indicated in Appendix E.

Employment success norms (on-the-job success norms) have been developed for thirteen occupational groups which have been clustered on the basis of sex.

| CLUSTER I                    | CLUSTER II                            |
|------------------------------|---------------------------------------|
| PRIMARILY MALE CURRICULA     | CURRICULA WITH BOTH MALES AND FEMALES |
| Automotive                   | Accounting                            |
| Carpentry                    | Data Processing                       |
| Electronics                  |                                       |
| Machine Shop                 | CLUSTER III                           |
| Mechanical Drafting & Design | PRIMARILY FEMALE CURRICULA            |
| Power and Home Electricity   | Clerical Training                     |
| Welding                      | Cosmetology                           |
|                              | Practical Nursing                     |
|                              | Secretarial Training                  |

### INTERPRETING THE NORMS

#### Description of the Profiles

The profiles were developed from tabular data indicating the percentile associated with each score. The light-weight line represents the range between the 95th and the 5th percentiles. The top and bottom five per cents were eliminated to avoid having to consider extremely high or low scores. The bold bar represents the middle two thirds of the scores that were obtained most often by persons who successfully completed a training program or who were successful on the job. The middle two-thirds was identified by using the percentiles. The top of the bold bar is located at the 83.5 percentile and the bottom of the bar is located at the 16.5 percentile. Table is an example of such a profile for the automotive group. The percentiles were used in developing the profiles rather than the mean and standard deviation because the percentiles are sensitive to skews in the distributions. However, the mean and standard deviation of the scores for each aptitude are presented in Appendices D and E for each occupational group along with the number of scores which went into each calculation.

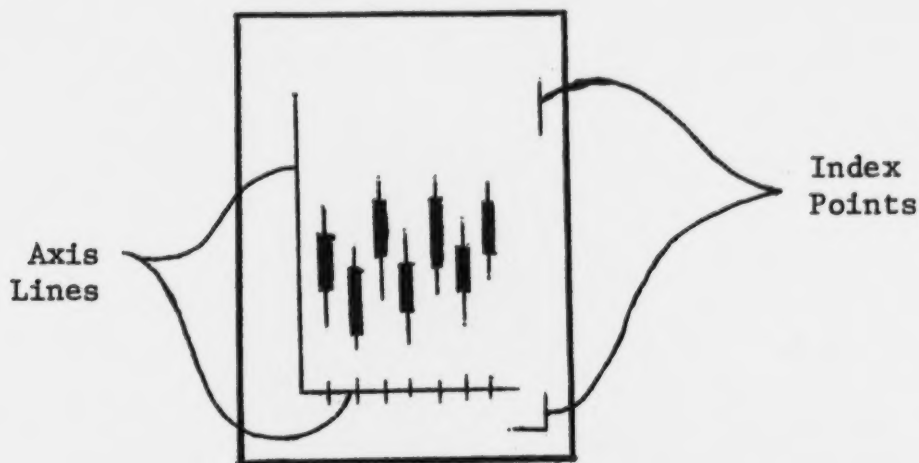
The profiles included in this publication were based upon aptitude scores derived from the written portions of the GATB (B-1002 Form B) using the National Computer Systems (NCS) answer sheet. Raw part scores which are the raw scores obtained from the separate tests or parts of the GATB are not identical when using NCS and IBM answer sheets. However, scores obtained from both the NCS and IBM answer sheets are adjusted to the same scale with a mean of 100 and a standard deviation of 20 through converting them to converted scores when obtaining aptitude scores. It would appear, therefore, that aptitude scores derived from the NCS and IBM answer sheets are equivalent. THE NORMS PRESENTED IN THIS PUBLICATION WERE DEVELOPED USING THE NCS ANSWER SHEET. APTITUDE SCORES OBTAINED THROUGH USING THE NCS OR IBM ANSWER SHEETS ARE SUPPOSEDLY EQUIVALENT.

#### Preparing the Profiles for Counseling

The profiles are organized in Appendices B and C into the three major clusters for easy reference. A sample student profile sheet is also included as page 65 of this report.

First, transparencies should be made of the profiles. This can be done as follows:

- a. Take the profiles out of the booklet.
- b. Each of the profile sheets has two index points. Match the lower right hand corner of the transparency material with the right angle index point on the lower right hand corner of the profiles. Match the right hand edge of the transparency material with the line index point on the upper right hand corner of the profile sheet. Make the transparency.



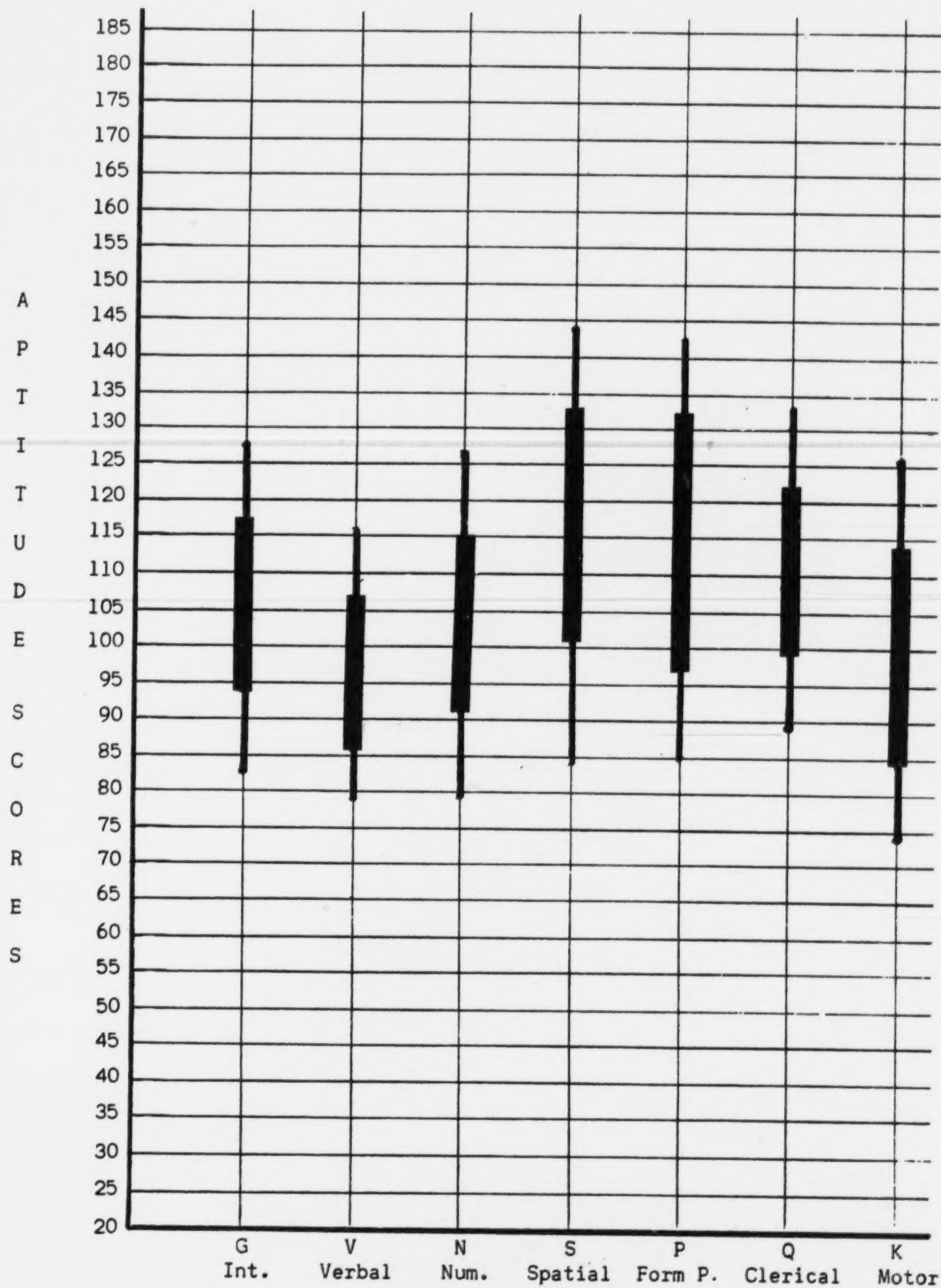
- c. After making transparencies of all of the profiles in a given cluster, punch all of the transparencies at one time with a three-hole punch.
- d. Place the transparencies into a three ring binder. When looking through all of the transparencies in a given cluster at one time, all of the axis lines should match.

Second, duplicate the student profile sheet. To make additional copies of the student profile sheet, do the following;

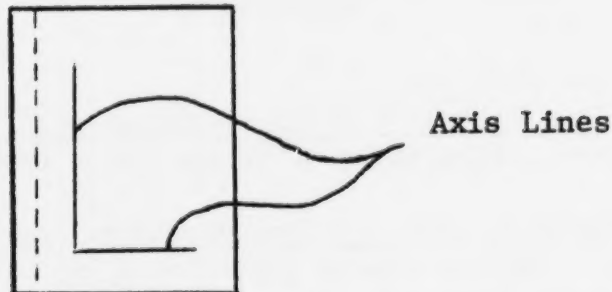
- a. Take the sample sheet out of the booklet.

TABLE 1  
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
GATB APTITUDE SCORE  
PROFILE SHEET  
AUTOMOTIVE

-8-



- b. Trim the profile summary sheet along the dotted line.



- c. Duplicate the sheet after it has been trimmed. Make sure the left hand edge of the new sheets is the same distance from the axis lines as the dotted line is or was on the sample.

#### Using the Prepared Profiles in Counseling

1. Administer the GATB (B-1002 Form B) in accordance with Employment Service recommendations.
2. Obtain GATB (B-1002 Form B) aptitude scores for a given individual.
3. Plot the individual's scores on a student profile summary sheet.
4. Place the individual student profile summary sheet under each of the transparencies to determine how similar the individual's profile is to that of people who have successfully completed training or have been successful on the job in each of the occupational areas.

It is recommended that each individual be allowed to make such comparisons himself with the counselor. If a person's profile does not fall within the bold portion of all the profile stalks of a given occupational group, this does not mean he could not succeed in the occupation. It only means he is more different on that dimension measured by the GATB than 66 per cent of those who successfully completed training or who were successful on the job in the given occupational area.

#### REFERENCES

- Ghiselli, E.E. The Validity of Occupational Aptitude Tests. New York, London, and Sydney: John Wiley & Sons, Inc., 1966.
- Manual for the General Aptitude Test Battery, Section III: Development. Washington, D.C.: United States Department of Labor, Manpower Administration, Bureau of Employment Security, October, 1967.
- Prediger, D.J., Waple, C.C., and Nusbaum, G.R. "Predictors of Success in High School Level Vocational Education Programs: A Review, 1954-1967." Personnel and Guidance Journal, October, 1968, pp. 137-145.
- Pucel, D.J., and Nelson, H.F. General Aptitude Test Battery (B-1002 Form B) Training Success Norms. Minneapolis, Minnesota: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, February, 1969.
- Pucel, D.J., and Nelson, H.F. General Aptitude Test Battery (B-1002 Form B) Training Success Norms Including Supplement One. Minneapolis, Minnesota: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, February, 1970.
- Pucel, D.J., Nelson, H.F., Asche, M., and Faurot, L.F. The Ability of Standardized Test Instruments to Differentiate Membership in Different Vocational-Technical Curricula. Minneapolis, Minnesota: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, March, 1972.
- Pucel, D.J., Nelson, H.F., and Mohamed, D.A. The Ability of Standardized Test Instruments to Predict Training Success and Employment Success. Minneapolis, Minnesota: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, March, 1972.

-11-  
APPENDIX A

PROJECT MINI-SCORE OCCUPATIONAL TRAINING PROGRAM GROUPS

MECHANICS AND MACHINERY REPAIR

- 6. Automotive  
Auto Mechanic  
Auto Body Repair  
Automobile Management  
Automobile Technician
- 10. Diesel Mechanics  
Diesel Mechanics  
Diesel Mechanics Technician  
Truck & Diesel Mechanics
- 13. Farm Equipment Mechanics  
Farm Equipment Mechanics  
Farm Mechanics I & II
- 18. Aircraft Mechanics  
Aviation Mechanics
- 19. Service Station Mechanic  
Automotive Services  
Automotive Service Station  
Mechanics Attendant  
Mechanical Repair & Servicemen
- 25. Marine and Small Engine Mechanics
- 56. Heavy Equipment Operation and Repair

APPLIANCE & REFRIGERATION REPAIR

- 14. Appliance Repair
- 30. Office Machine Mechanic
- 32. Mechanical Refrigeration & Air Conditioning
- 7. PRINTING AND GRAPHIC ARTS  
Graphic Arts  
Graphic Arts I, letter press  
Graphic Arts II, Photolithography  
and off-set printing  
Off-set Printing
- 21. PLUMBING AND SHEETMETAL
- 22. FLUID POWER TECHNOLOGY

SELLING AND RELATED WORK

- 41. Sales  
Sales Management  
Sales & Marketing  
Sales Training
- 46. Business Management

AGRICULTURAL RELATED OCCUPATIONS

- 37. Agri-Technology  
Agri-Chemicals & Fertilizers,  
Sales & Service  
Agricultural Technician  
(Animal Science)  
Agricultural Technician  
(Plant Science)  
Agricultural Sales Technician
- 42. Farm Equipment Sales  
Farm Equipment Sales & Service  
Partsman Training
- 50. Agri-Business  
Agri-Business Management  
Agri-Business Office Training
- 51. Farm Management

DRAFTING, ARCHITECTURAL, MECHANICAL AND  
TECHNICAL

- 8. Mechanical Drafting and Design  
Engineering Drafting  
Industrial Drafting  
Industrial Drafting Technology  
Machine Drafting  
Mechanical Drafting  
Technical Drafting  
Design Technology  
Drafting and Design Technology
- 9. Architectural Drafting
- 35. Highway Technology  
Highway Technician  
Highway Technology  
Civil Technology
- 44. INTERIOR DESIGN & SALES ASSISTANT

## FOODS

15. Chefs and Cooks  
Cook, Institutional  
Hotel & Restaurant Cooking
31. Bakery Procedures
52. Food Management  
Management & Food Service
62. Butcher and Meat Cutting

## ELECTRICITY AND ELECTRONICS

1. Electronics  
Electronics  
Electronics, Communications  
Electronics, Computer Maintenance  
Electronics, Industrial & Home  
Entertainment Service  
Electronics, Industrial Technical  
Electronics, Radio & Television  
Electronics, Technician  
Communications  
Electronics, Technician Industrial  
Electronics, Technician  
Electronics, Technology
2. Power and Home Electricity  
Electrical  
Electrical, Construction  
Electrical Maintenance  
Electrical Technology  
Lineman Electrician  
Power and Plant Operation
58. Telephone Communications

## CONSTRUCTION INDUSTRY

4. Carpentry  
Building Construction  
Carpentry
28. Bricklaying

## WOODWORKING INDUSTRY

4. Carpentry  
Building Construction  
Carpentry
20. Cabinet Making

## MACHINE TRADE OCCUPATIONS

5. Tool and Die  
Tool and Design Technician  
Tool and Die Maker  
Tool, Die, and Mold Maker
11. Machinist  
Machine Operator  
Machinist  
Production Machinist
12. Welding
23. Pattern Maker
26. Plastic Injection Molding Technician

## BUSINESS, ACCOUNTING, CLERICAL, SECRETARIAL

45. Accounting
47. Clerical Training  
Clerical Record Keeping  
Clerk, General Office  
Clerk-Typist  
Clerk-Typist Machine Operator
48. Secretarial Training  
Educational Secretary  
Hospital Station Secretary  
Secretarial Training, General  
Secretarial Training, Medical  
Stenographic Training  
Medical Office Assistant  
Medical Office Service  
Legal Secretary
49. Data Processing  
Clerical Training & Data Processing  
Clerical Training & Key Punch  
Tabulating Machine Operator  
(Unit Records)

## HEALTH SERVICES

3. Practical Nursing
33. Dental Assistant
39. Medical Laboratory Assistant
40. WRITING

JEWELRY AND WATCH REPAIR

27. Watch Repair

55. Jewelry

59. INTERNATIONAL DOCUMENTS SPECIALIST

60. LAW ENFORCEMENT

63. BROADCASTING

FURNITURE MAKING

20. Cabinet Making

29. Upholstering

OPTICAL AND MEDICAL LAB

38. Optical Technology

39. Medical Laboratory Assistant

GROOMING

17. Cosmetology

24. Barbering

CLOTHING

53. Needle Arts

54. Tailoring

57. Fashion Merchandising

FOREST INDUSTRIES

36. Paper & Pulp Technology

61. Conservation and Forestry

LANDSCAPE AND FLORISTRY

34. Nursery-Landscape Technology

43. Retail Floristry

16. SHOE REPAIRING

APPENDIX B

APTITUDE SCORE PROFILES ,  
TRAINING SUCCESS NORMS

CLUSTER I

PRIMARILY MALE CURRICULA

|                                                                              | Page |
|------------------------------------------------------------------------------|------|
| Agri-Technology . . . . .                                                    | 15   |
| Aircraft Mechanics. . . . .                                                  | 16   |
| Architectural Drafting. . . . .                                              | 17   |
| Automotive. . . . .                                                          | 18   |
| Carpentry . . . . .                                                          | 19   |
| Chefs and Cooks . . . . .                                                    | 20   |
| Diesel Mechanics. . . . .                                                    | 21   |
| Electronics . . . . .                                                        | 22   |
| Farm Equipment Mechanics. . . . .                                            | 23   |
| Fluid Power Technology. . . . .                                              | 24   |
| Machine Shop. . . . .                                                        | 25   |
| Mechanical Drafting and Design. . . . .                                      | 26   |
| Mechanical Refrigeration, Air Conditioning,<br>and Appliance Repair. . . . . | 27   |
| Plumbing and Sheet Metal. . . . .                                            | 28   |
| Power and Home Electricity. . . . .                                          | 29   |
| Printing and Graphic Arts . . . . .                                          | 30   |
| Welding . . . . .                                                            | 31   |

CLUSTER II

CURRICULA WITH BOTH MALE AND FEMALE

|                                               |    |
|-----------------------------------------------|----|
| Accounting. . . . .                           | 32 |
| Data Processing . . . . .                     | 32 |
| Interior Design and Sales Assistant . . . . . | 34 |
| Sales . . . . .                               | 35 |

CLUSTER III

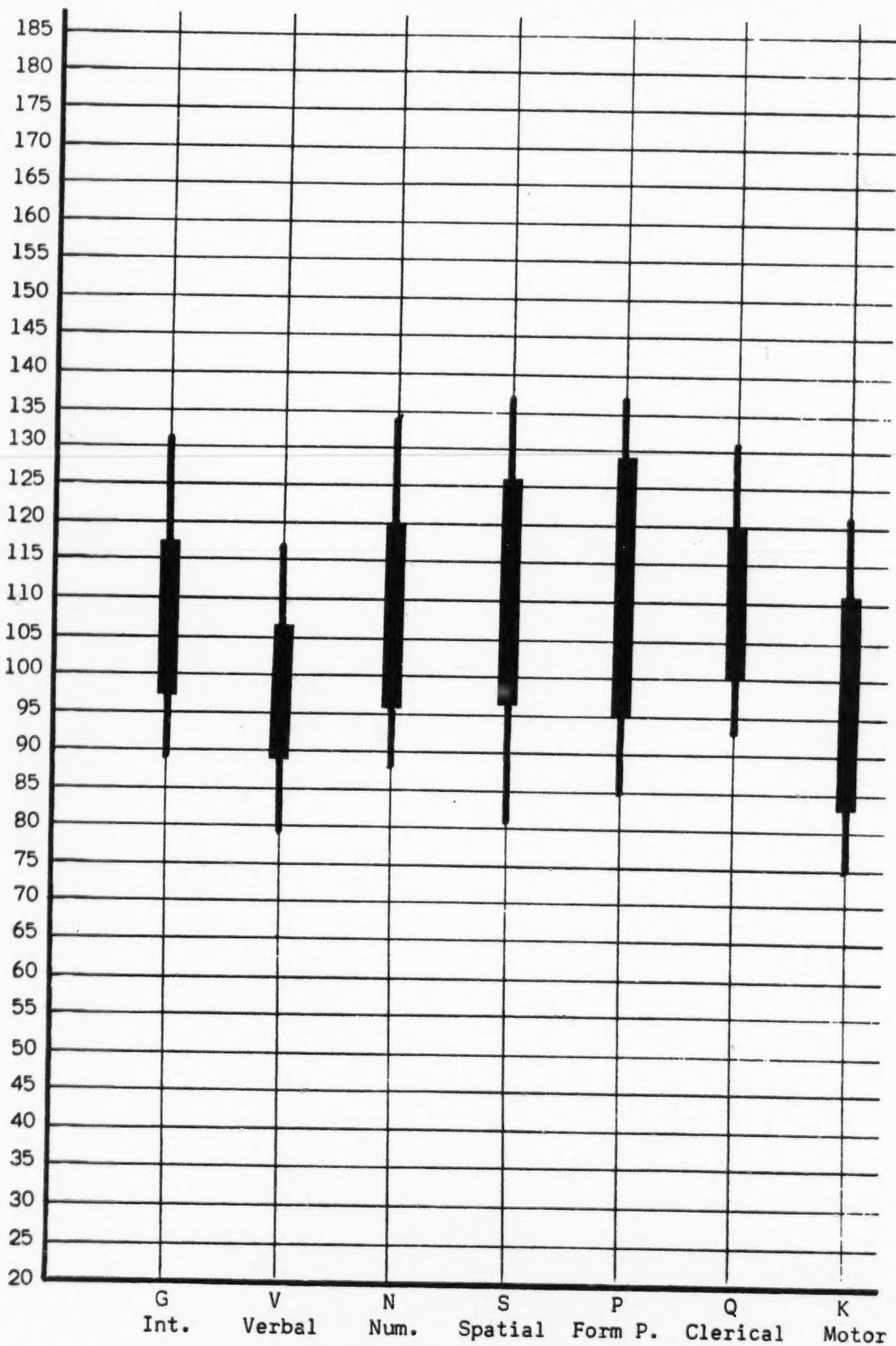
PRIMARILY FEMALE CURRICULA

|                                       |    |
|---------------------------------------|----|
| Clerical Training . . . . .           | 36 |
| Cosmetology . . . . .                 | 37 |
| Dental Assistant. . . . .             | 38 |
| Medical Laboratory Assistant. . . . . | 39 |
| Practical Nursing . . . . .           | 40 |
| Secretarial Training. . . . .         | 41 |

PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 AGRI-TECHNOLOGY

-15-

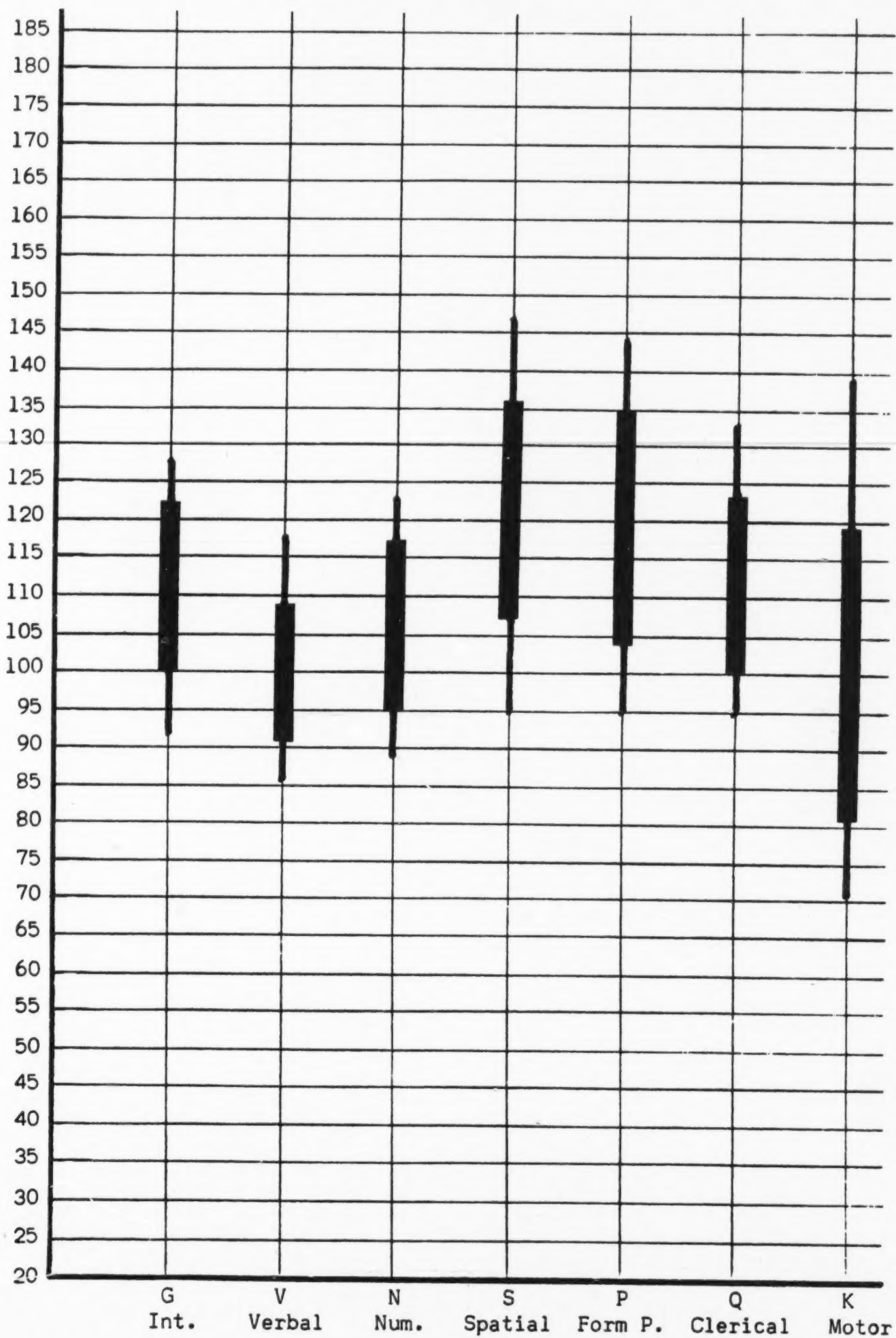
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 AIRCRAFT MECHANICS

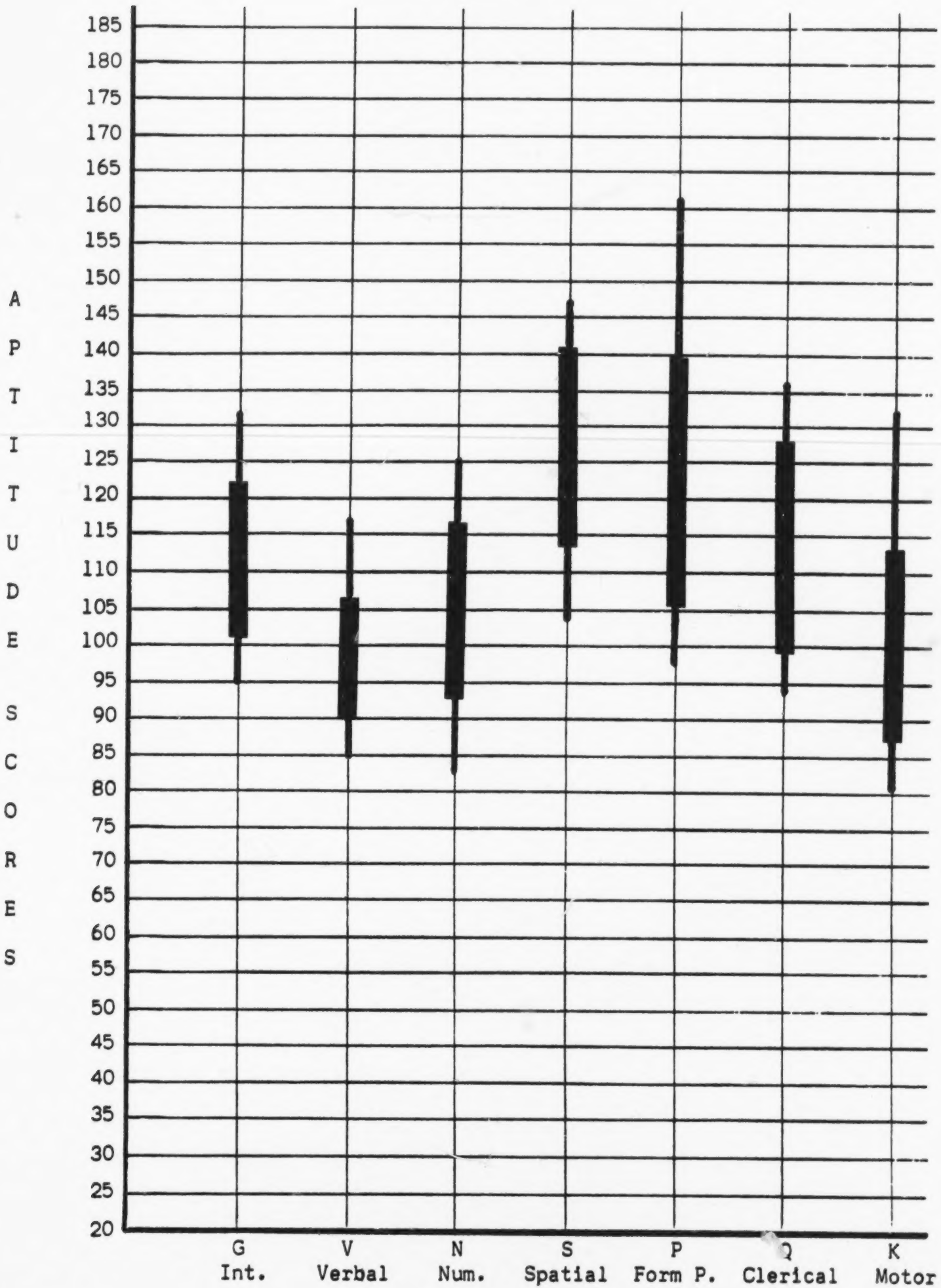
-16-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



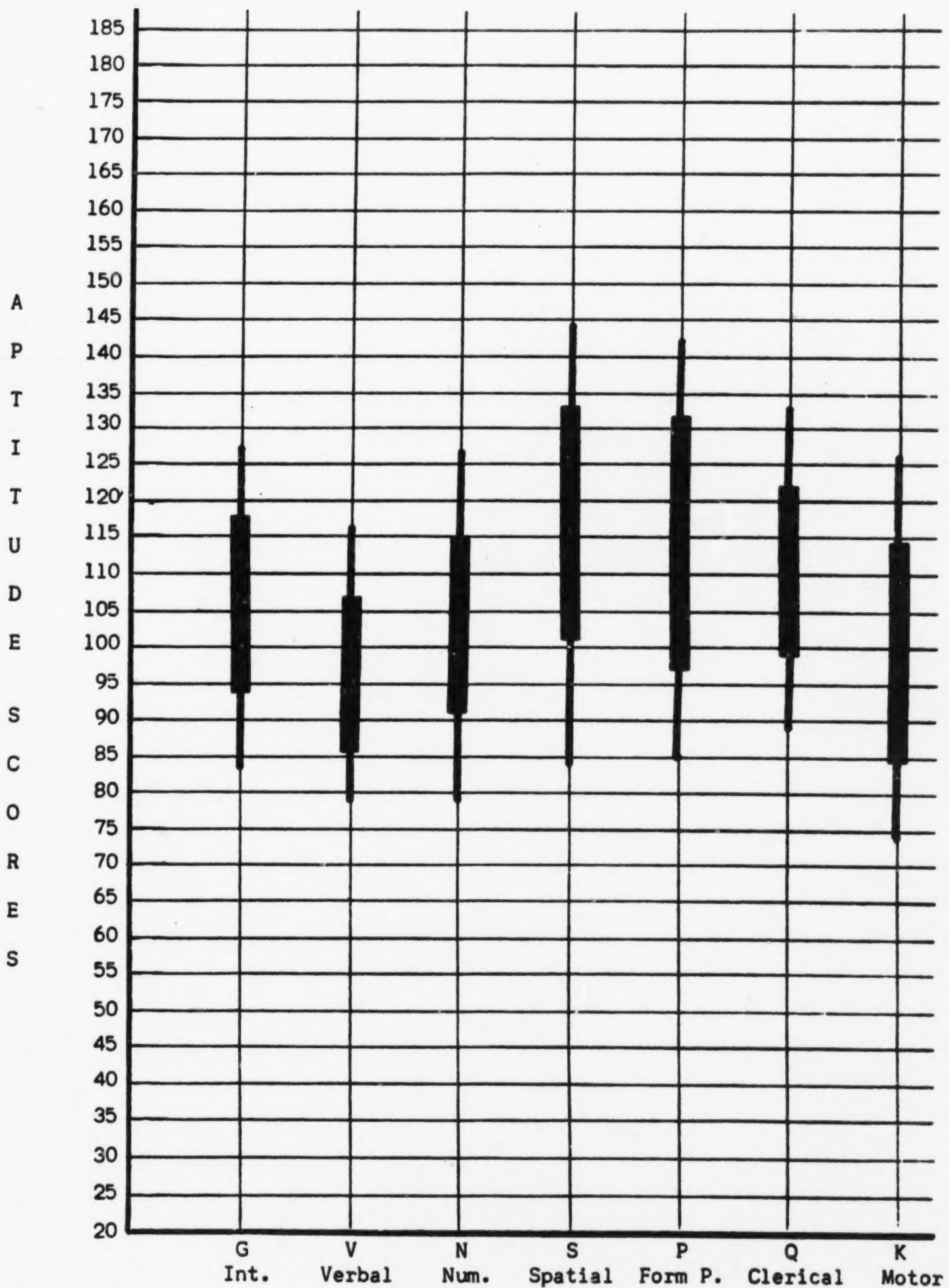
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 ARCHITECTURAL DRAFTING

-17-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 AUTOMOTIVE

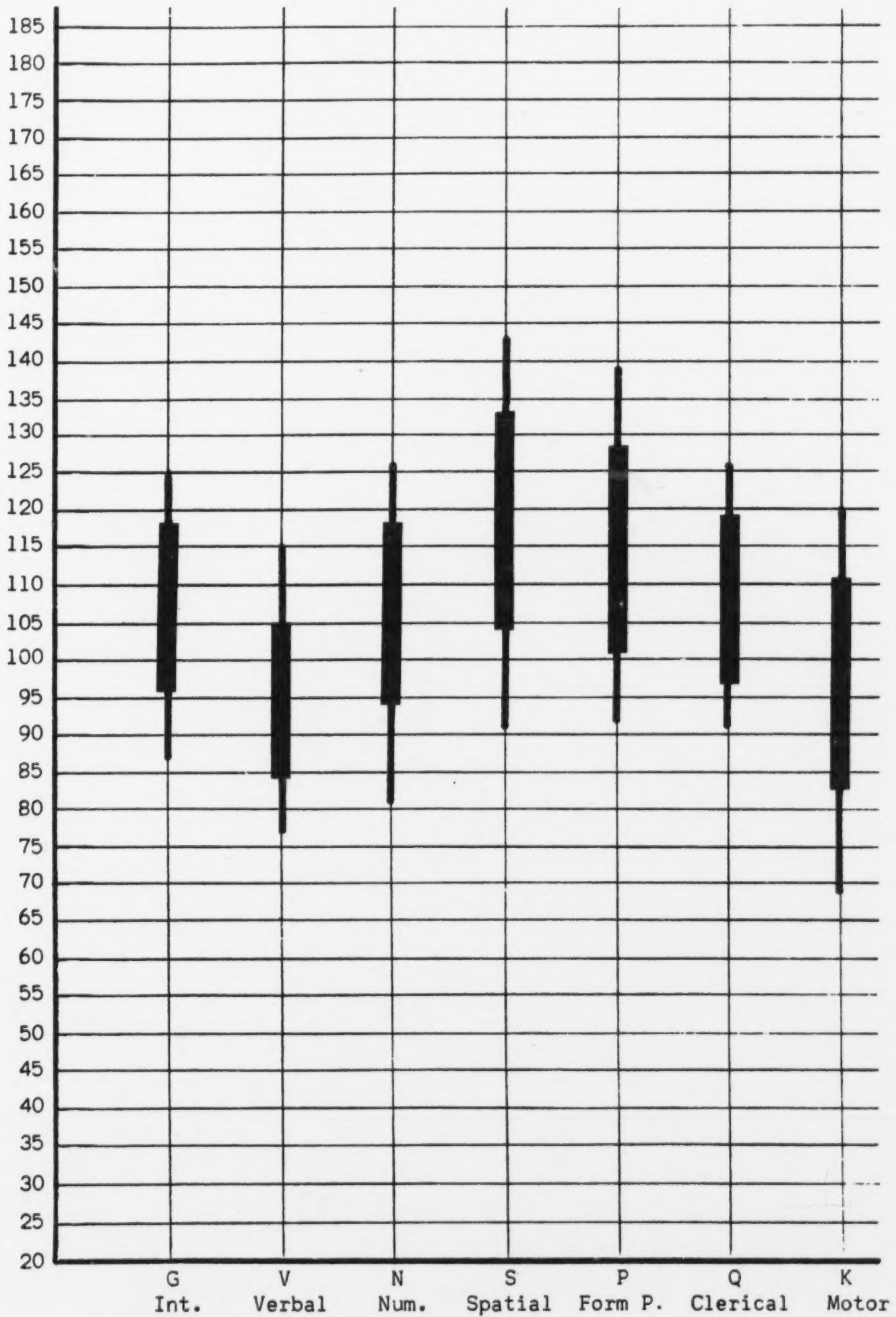
-18-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 CARPENTRY

-19-

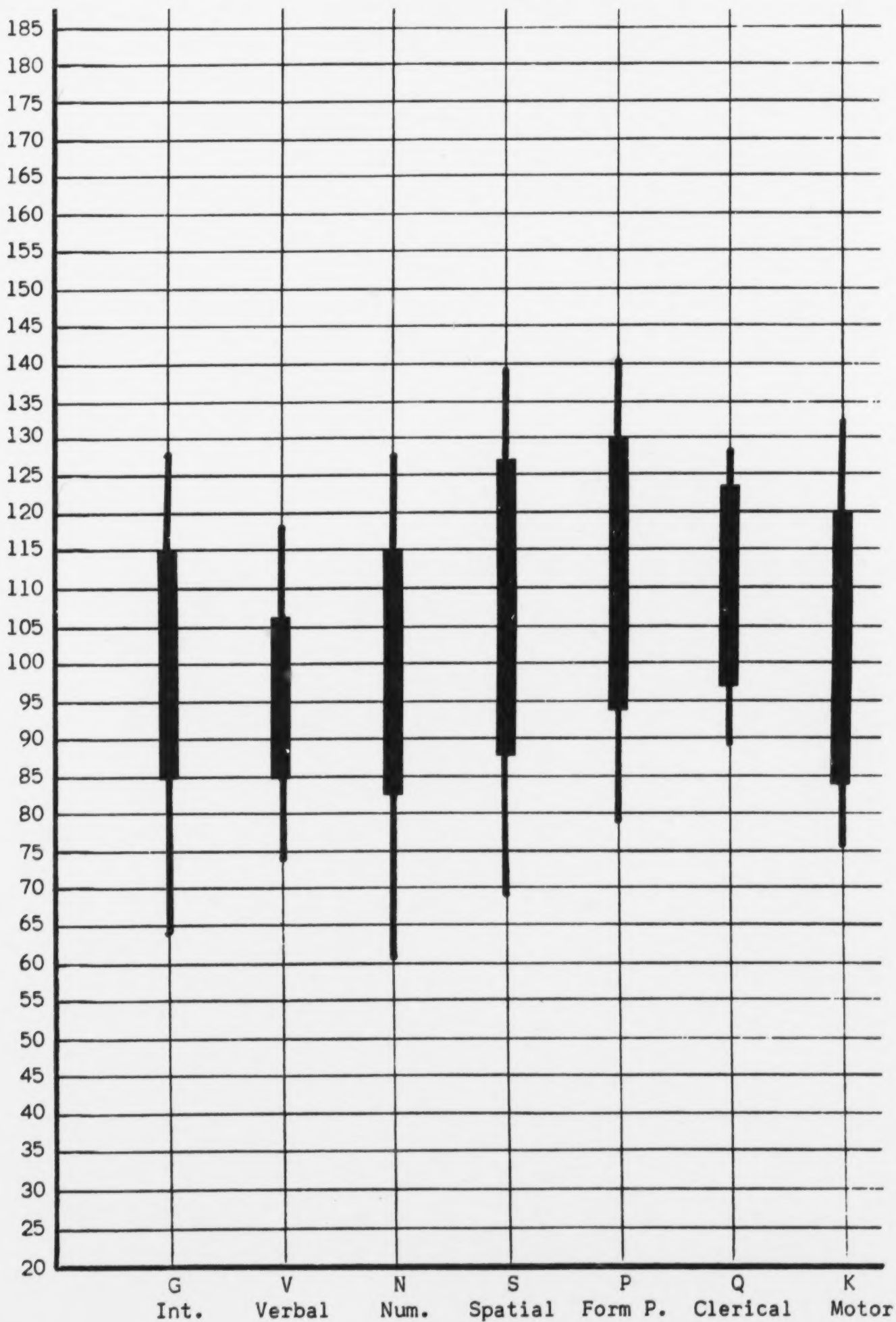
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 CHEFS AND COOKS

-20-

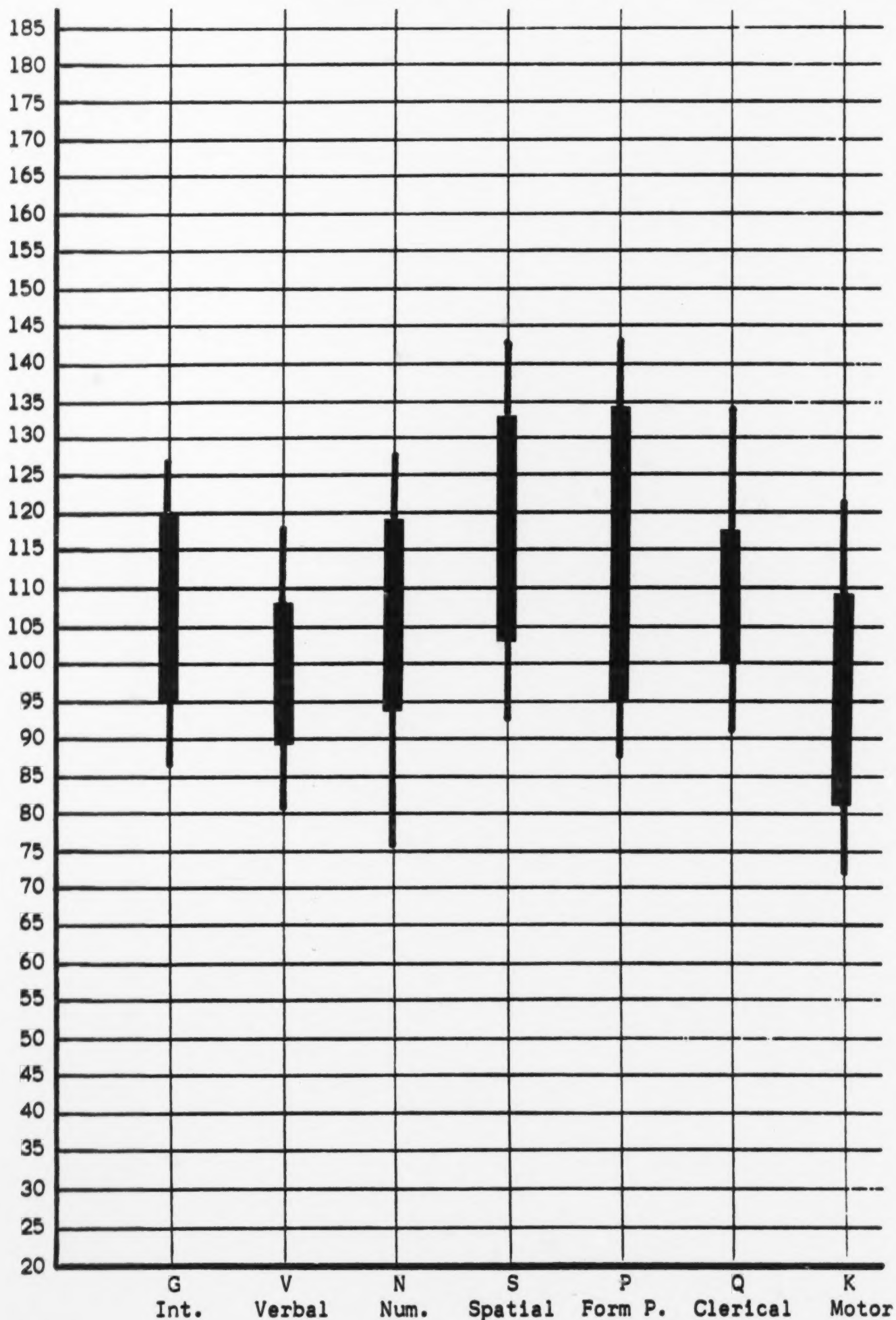
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 DIESEL MECHANICS

-21-

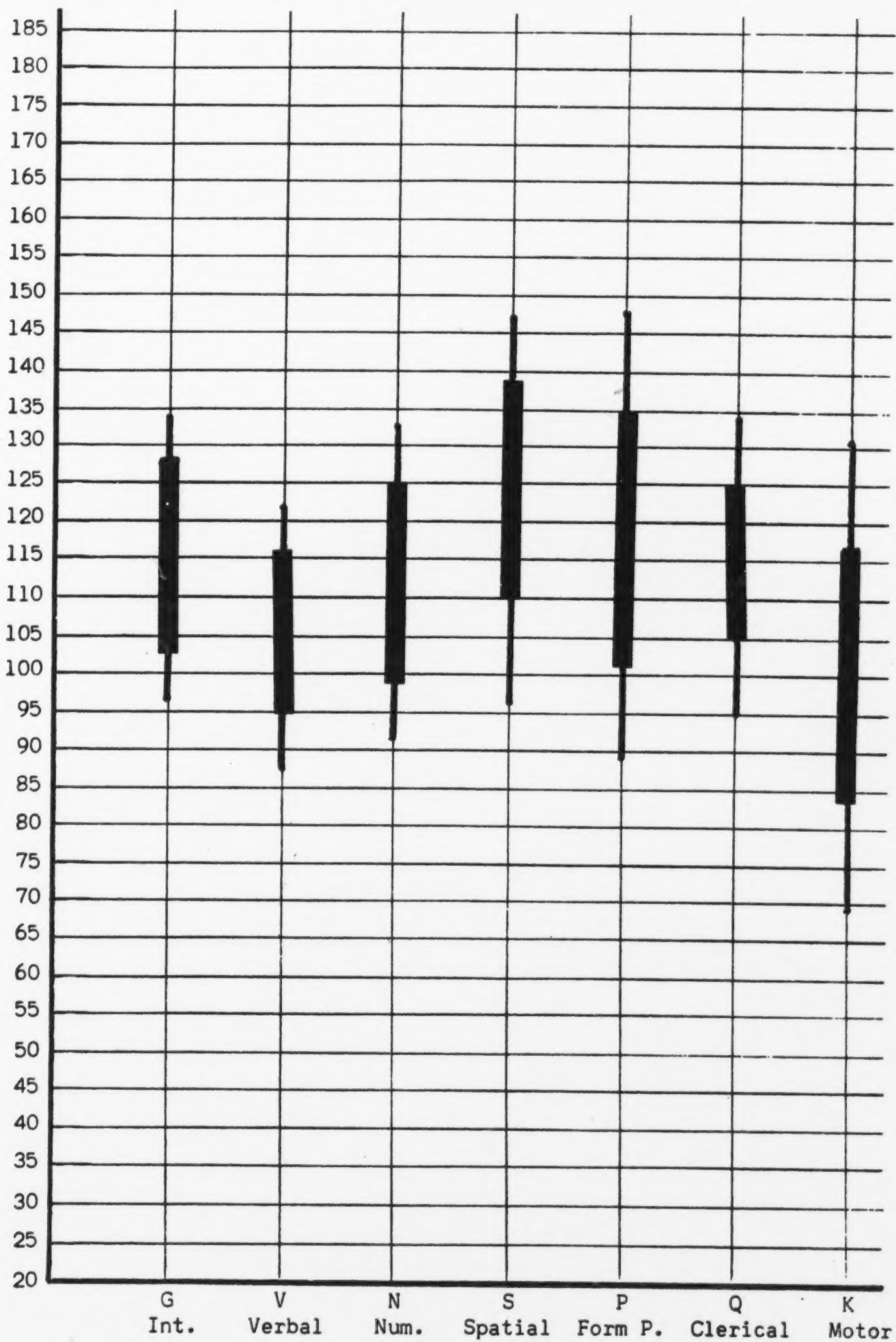
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 ELECTRONICS

-22-

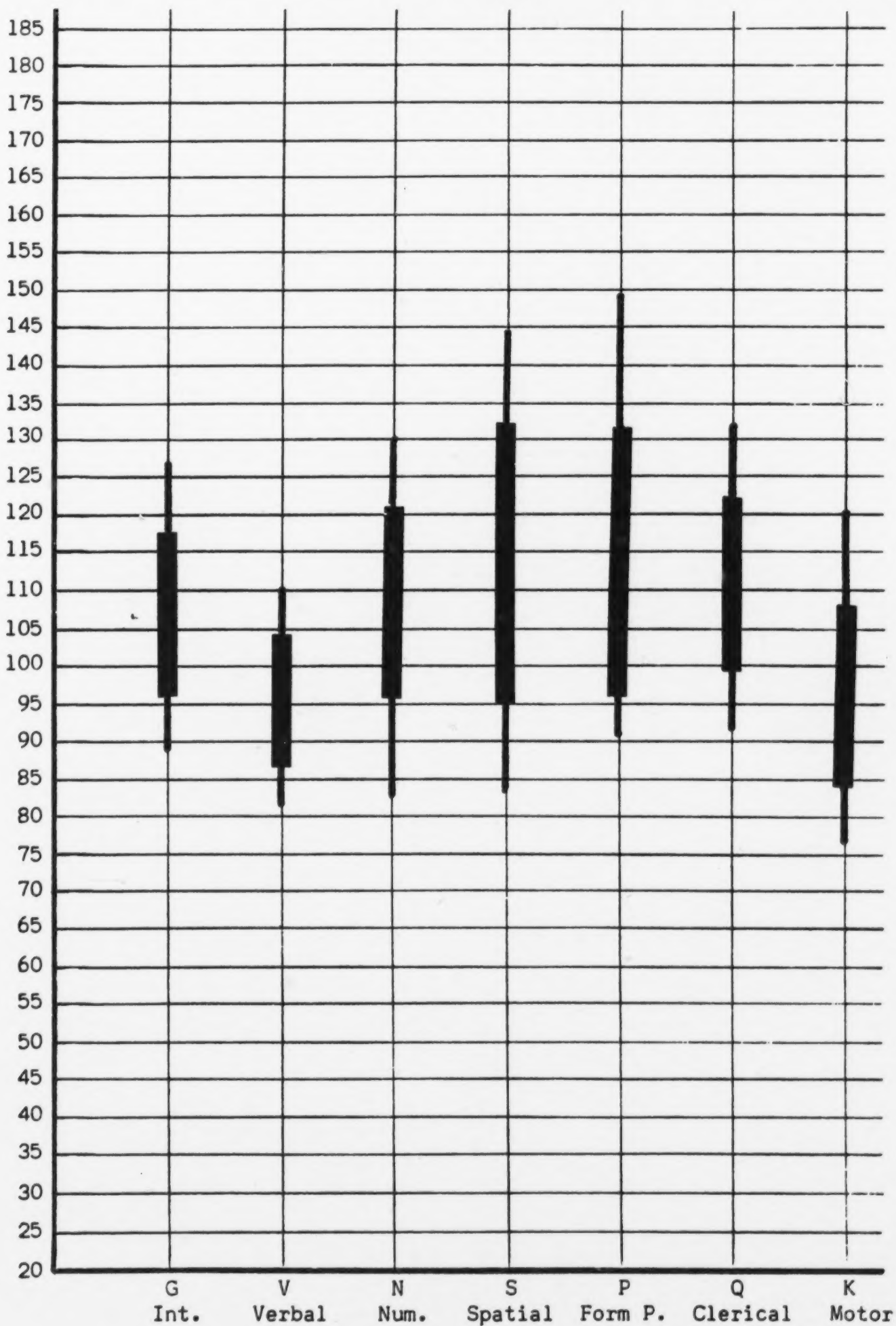
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 FARM EQUIPMENT MECHANICS

-23-

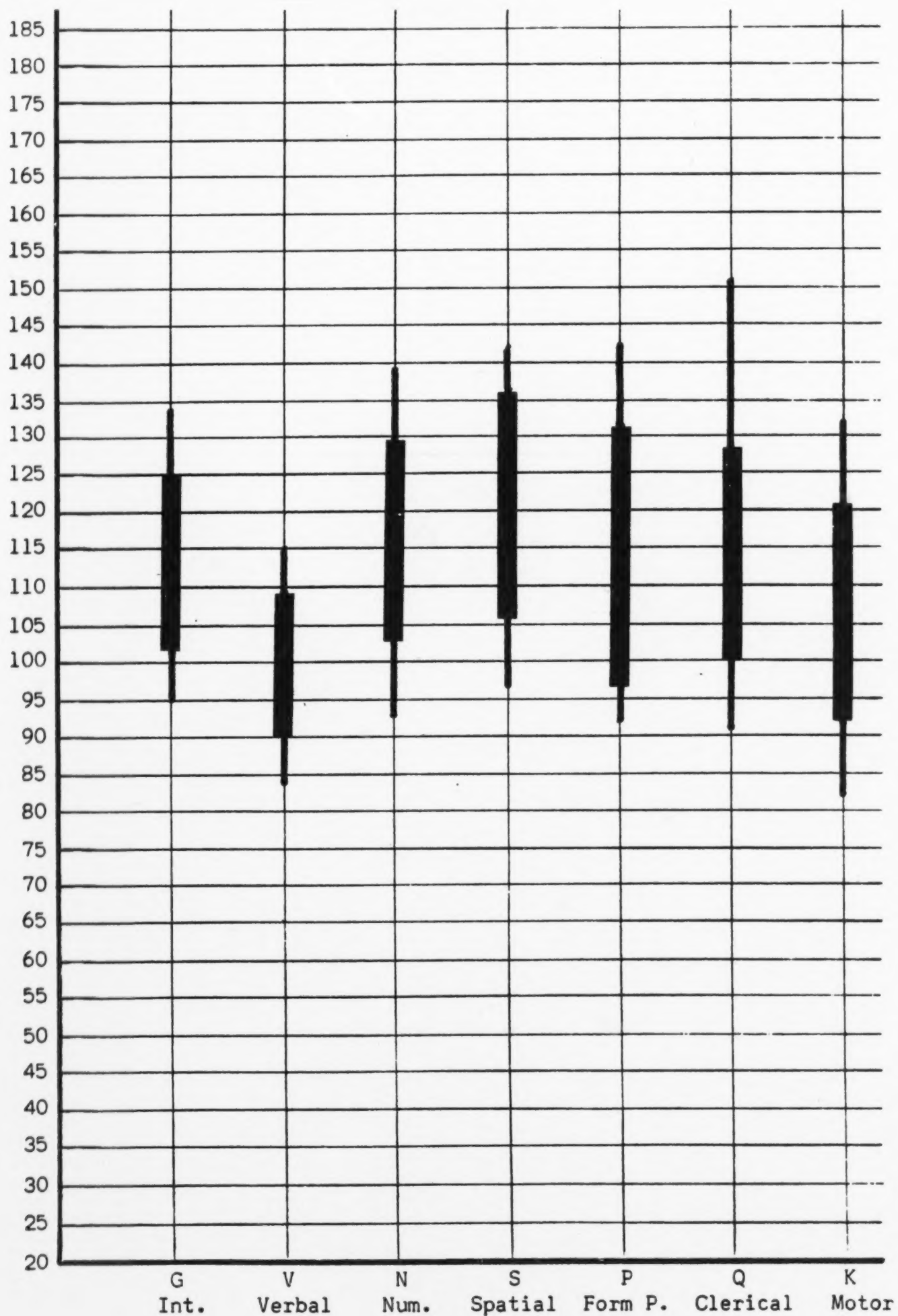
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 FLUID POWER TECHNOLOGY

-24-

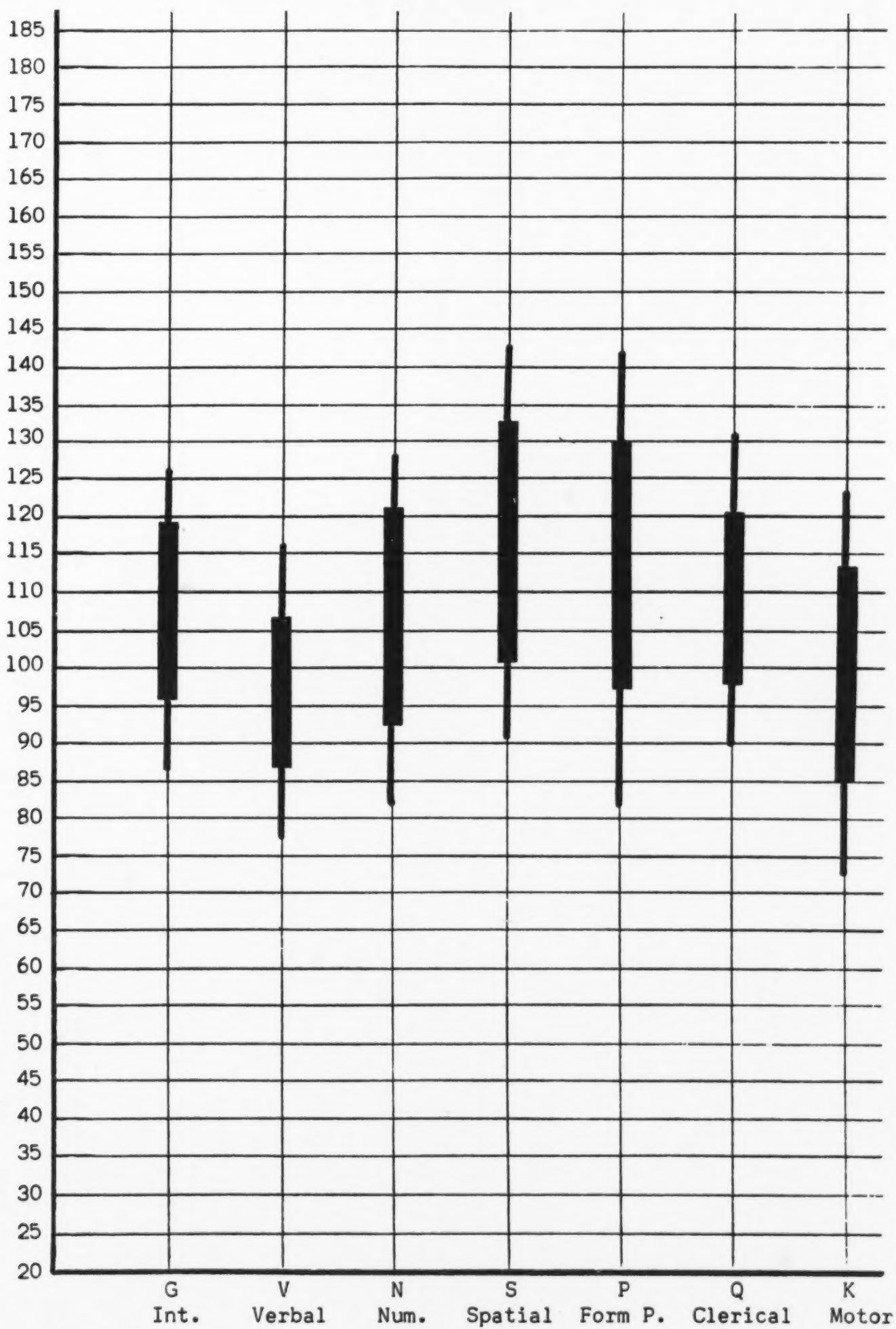
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 MACHINE SHOP

-25-

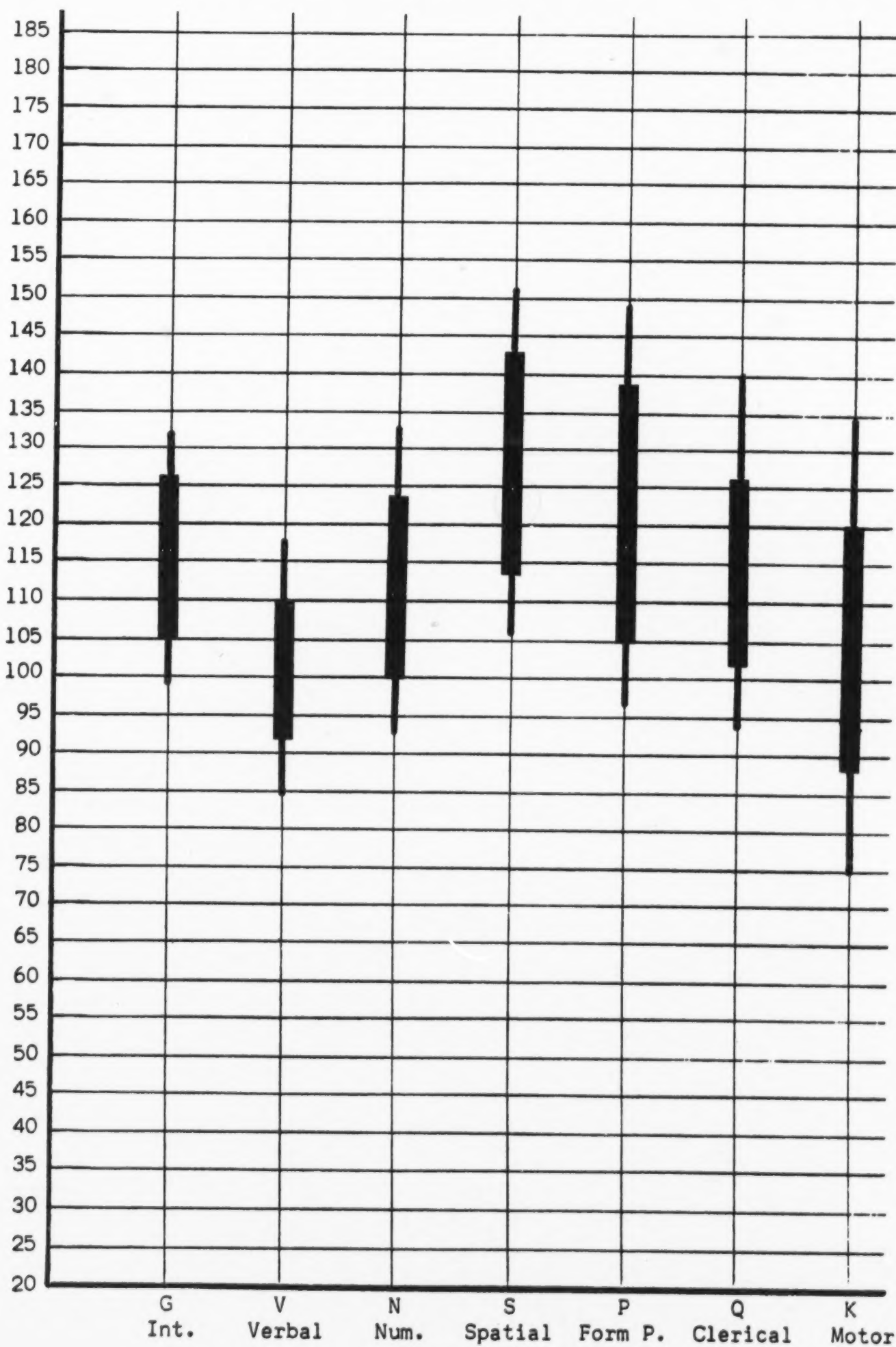
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 MECHANICAL DRAFTING & DESIGN

-26-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S

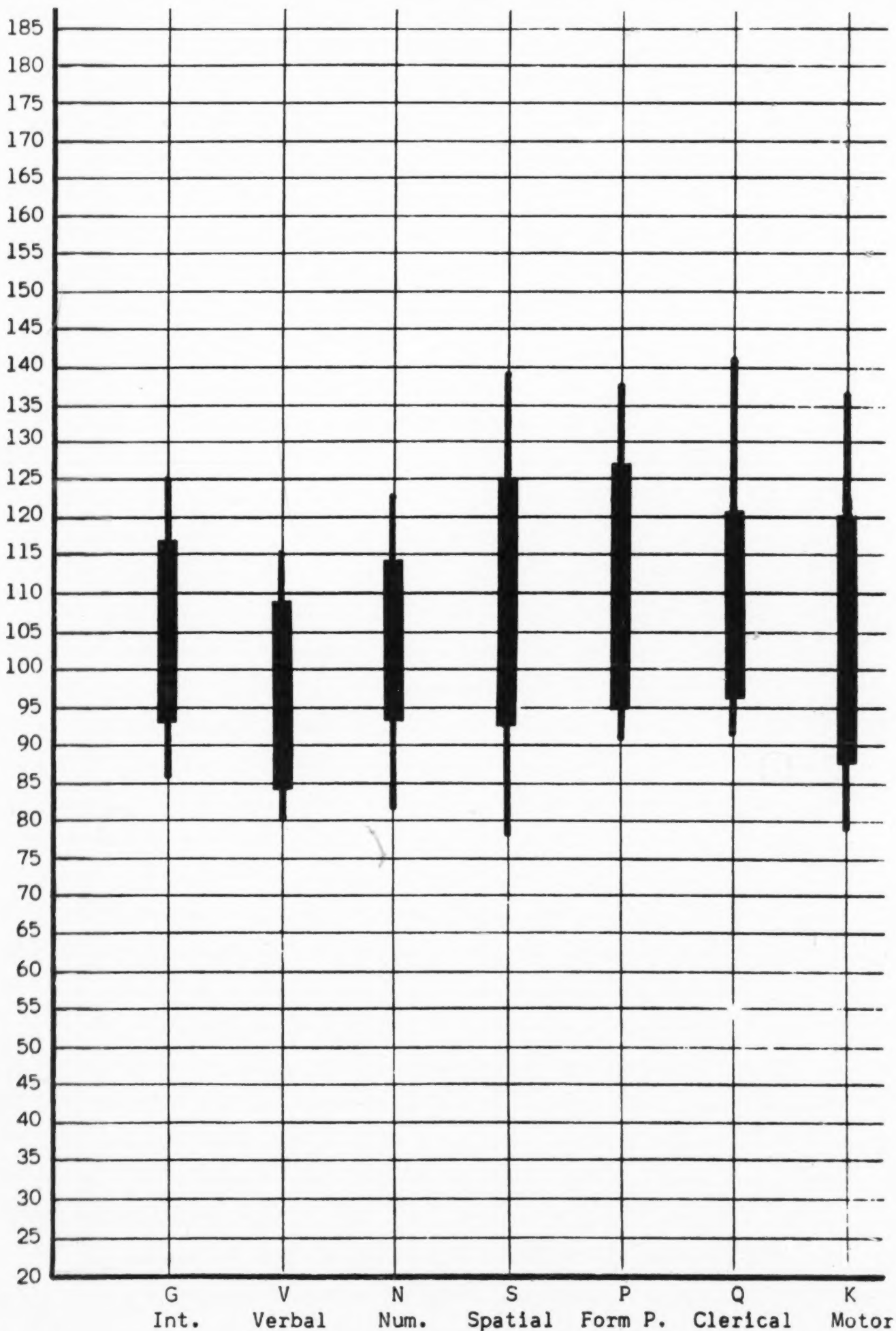


PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
GATB APTITUDE SCORE  
PROFILE SHEET

-27-

MECHANICAL REFRIGERATION, AIR CONDITIONING, AND APPLIANCE REPAIR

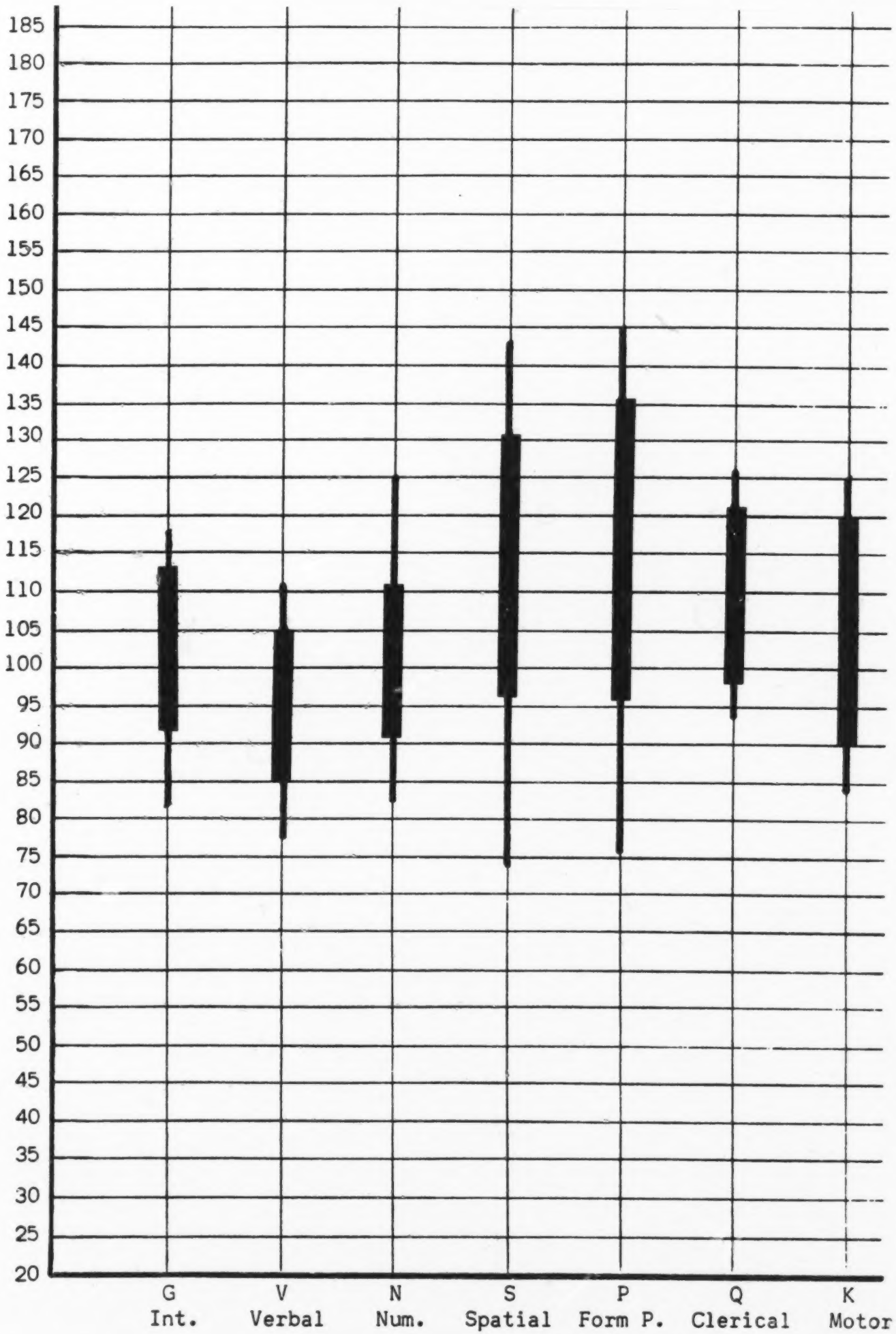
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 PLUMBING & SHEET METAL

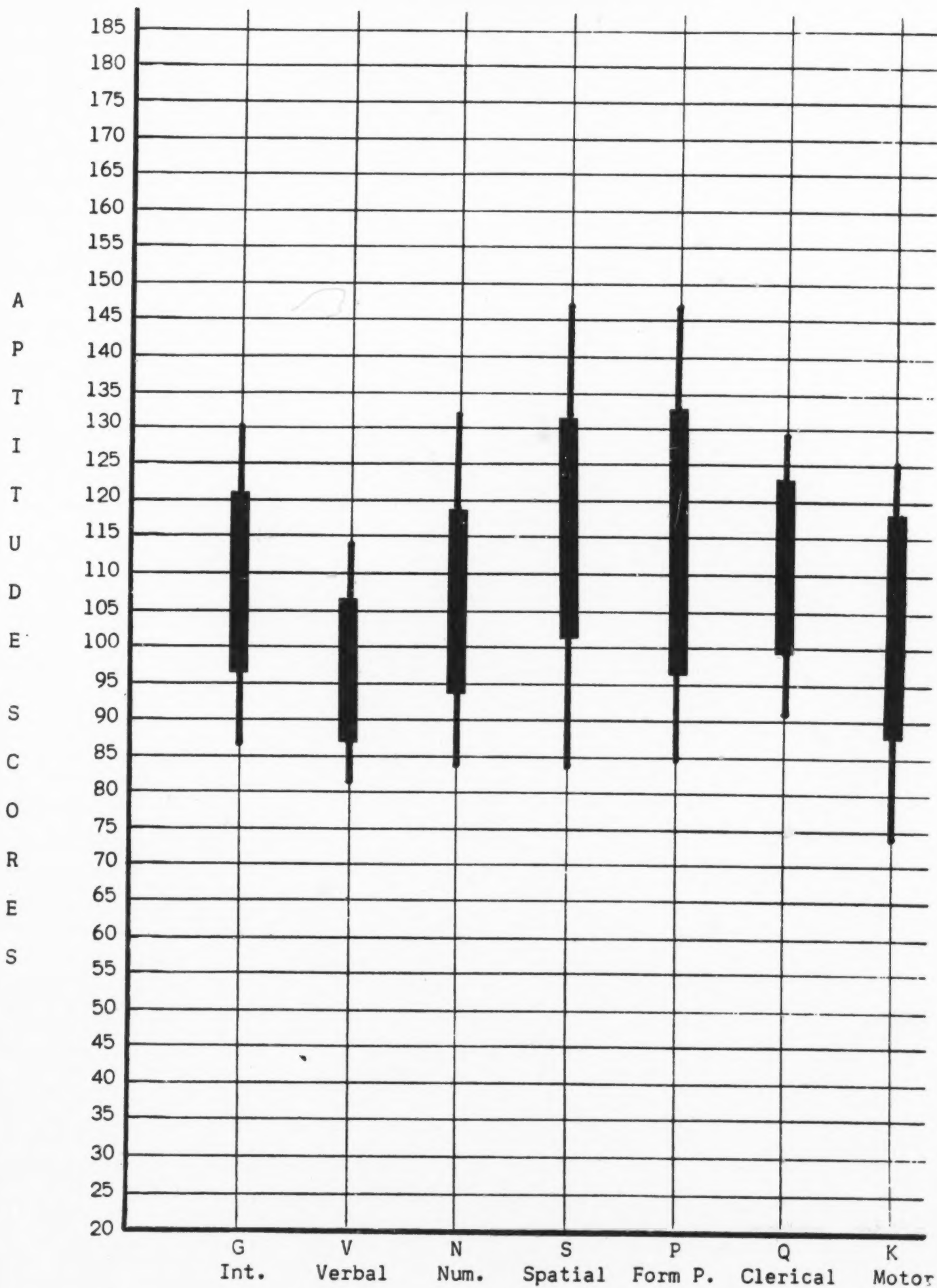
-28-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



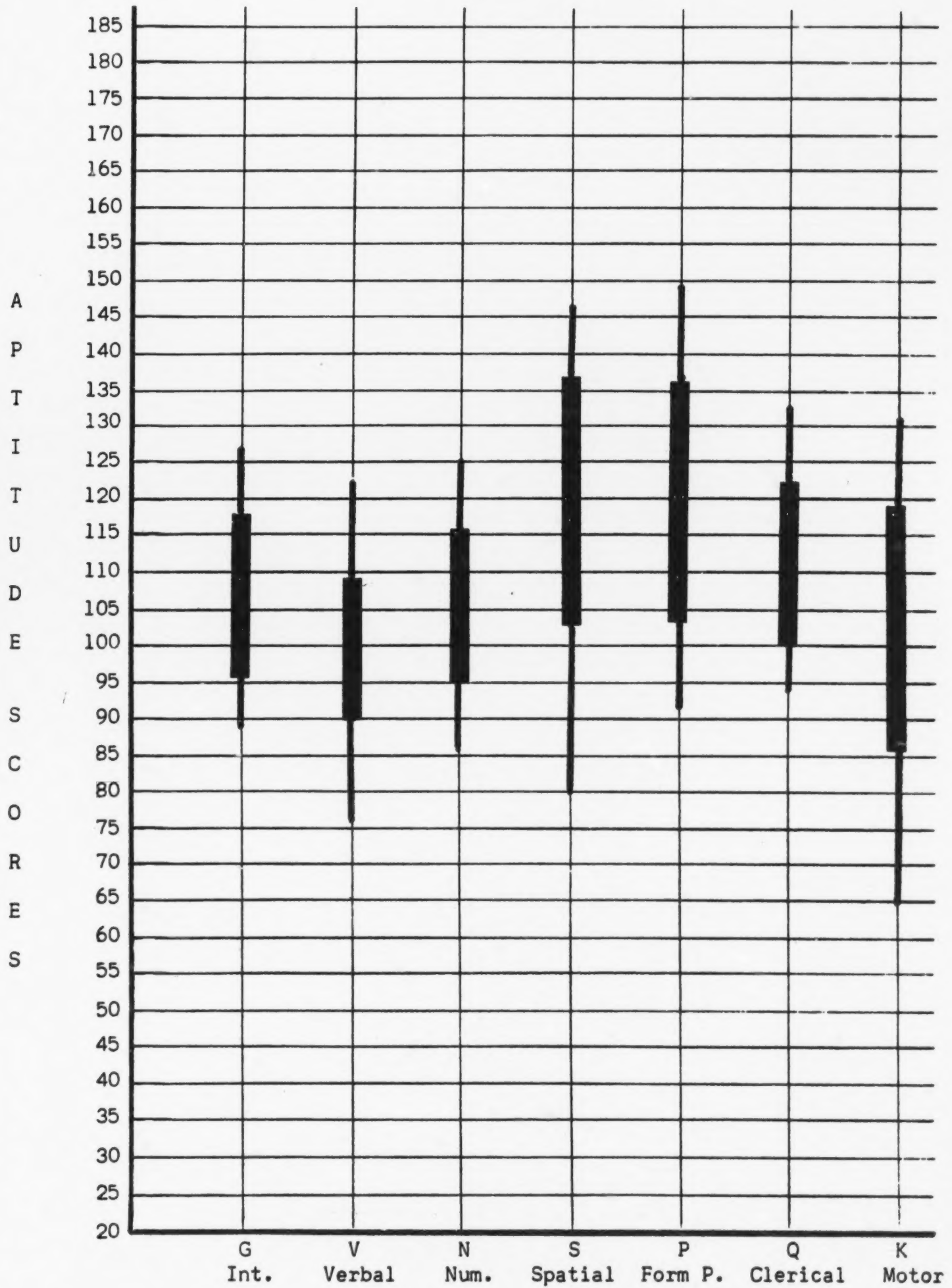
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 POWER & HOME ELECTRICITY

-29-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 PRINTING & GRAPHIC ARTS

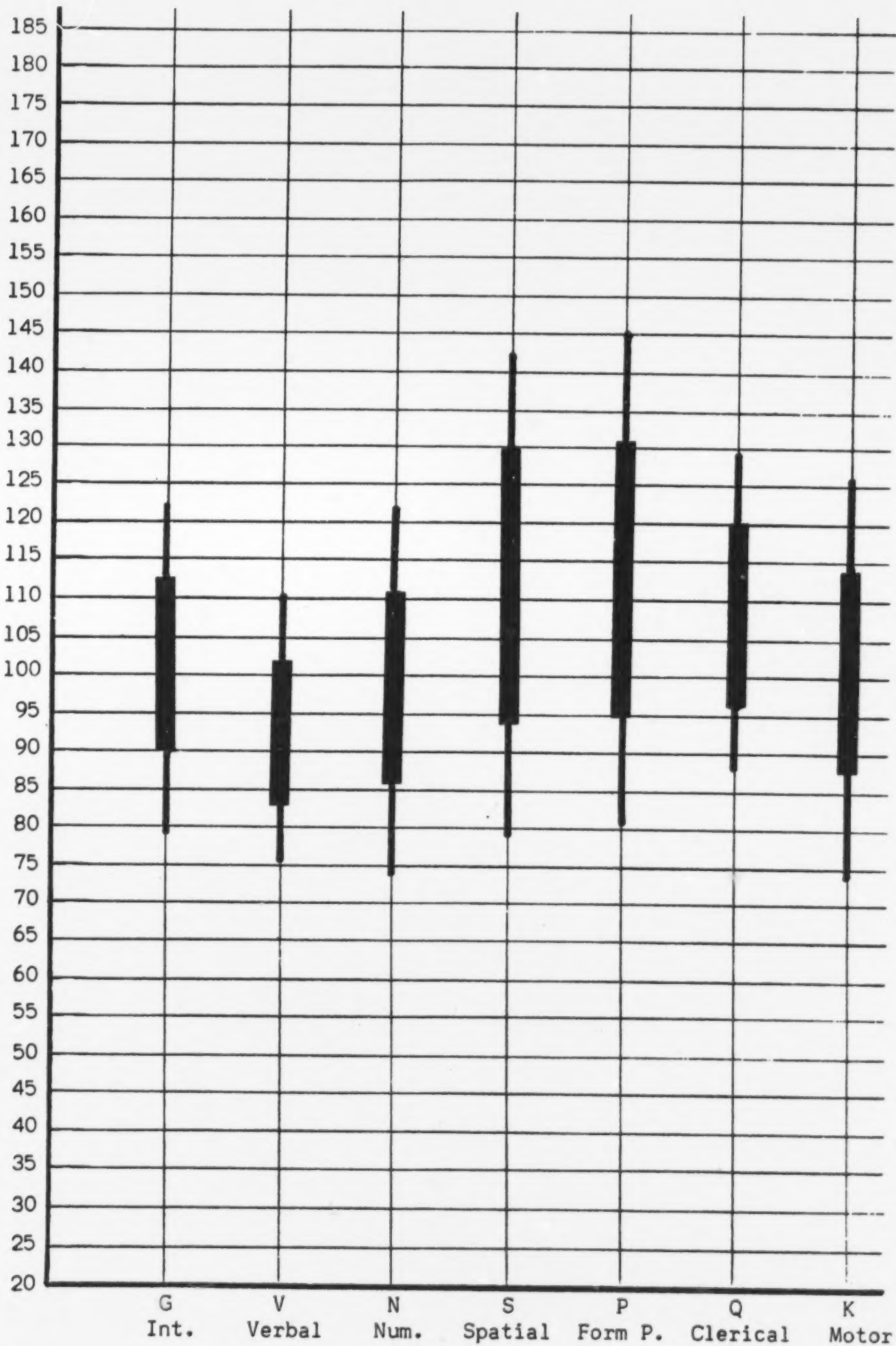
-30-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 WELDING

-31-

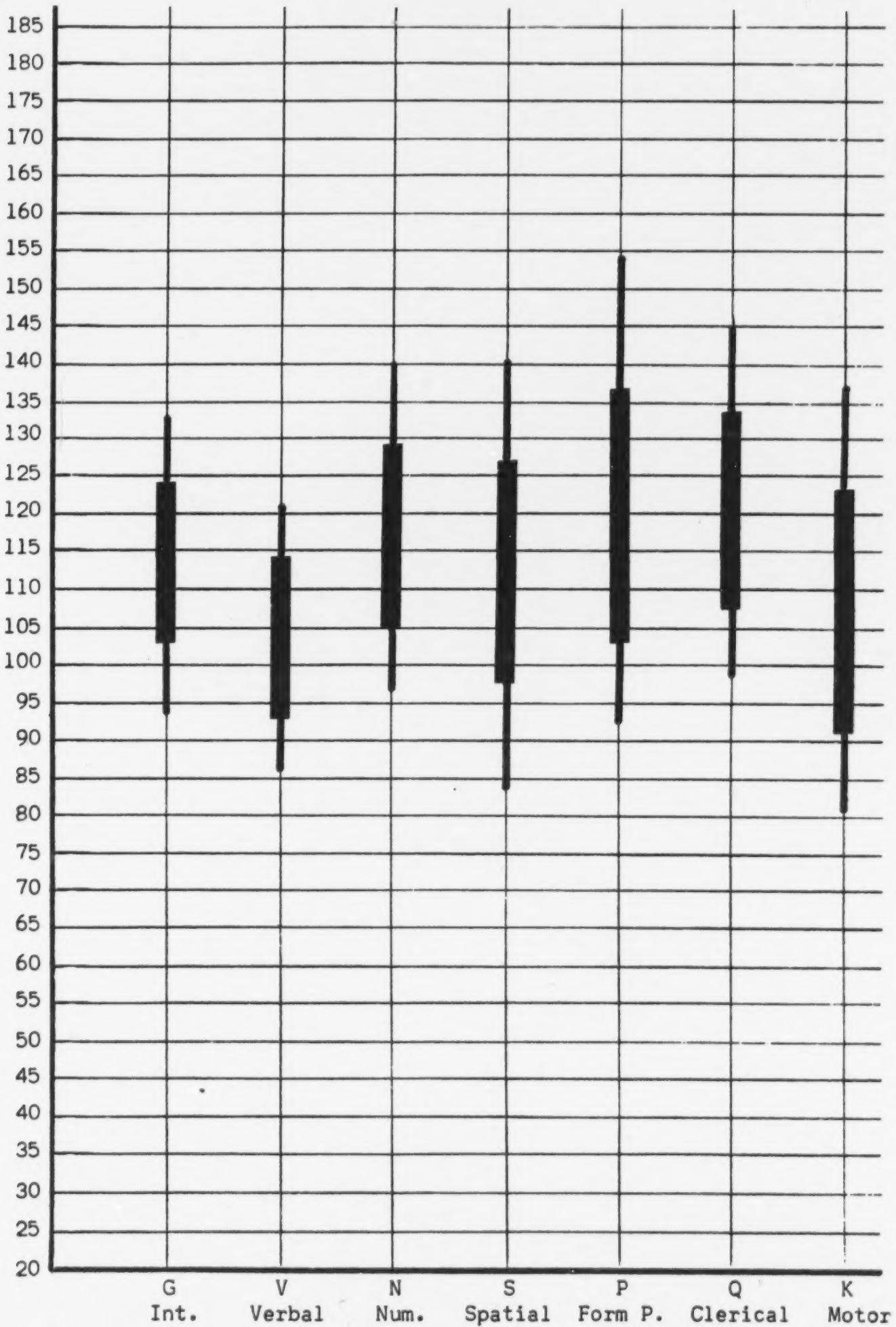
A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 ACCOUNTING

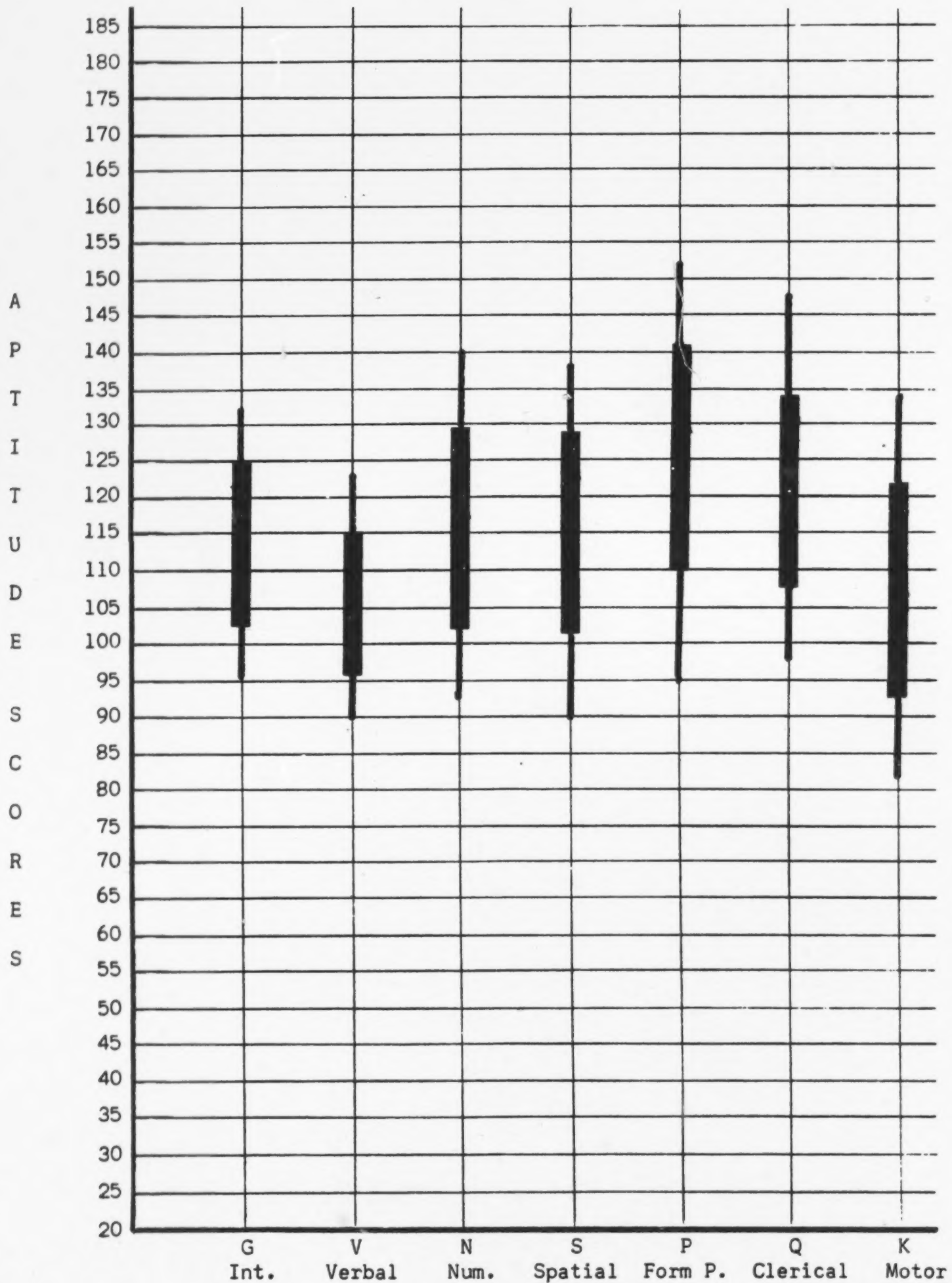
-32-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



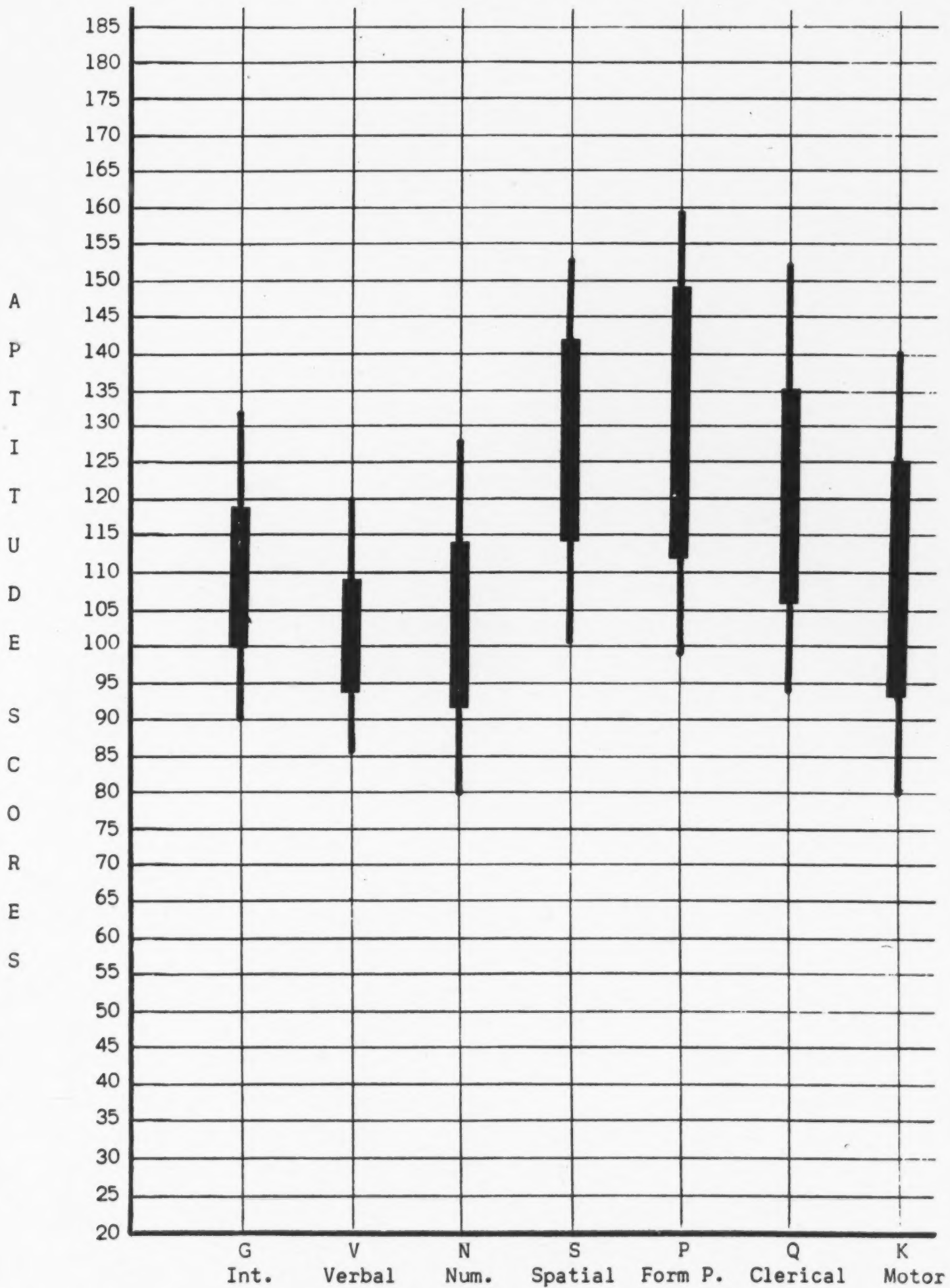
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 DATA PROCESSING

-33-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 INTERIOR DESIGN & SALES ASSISTANT

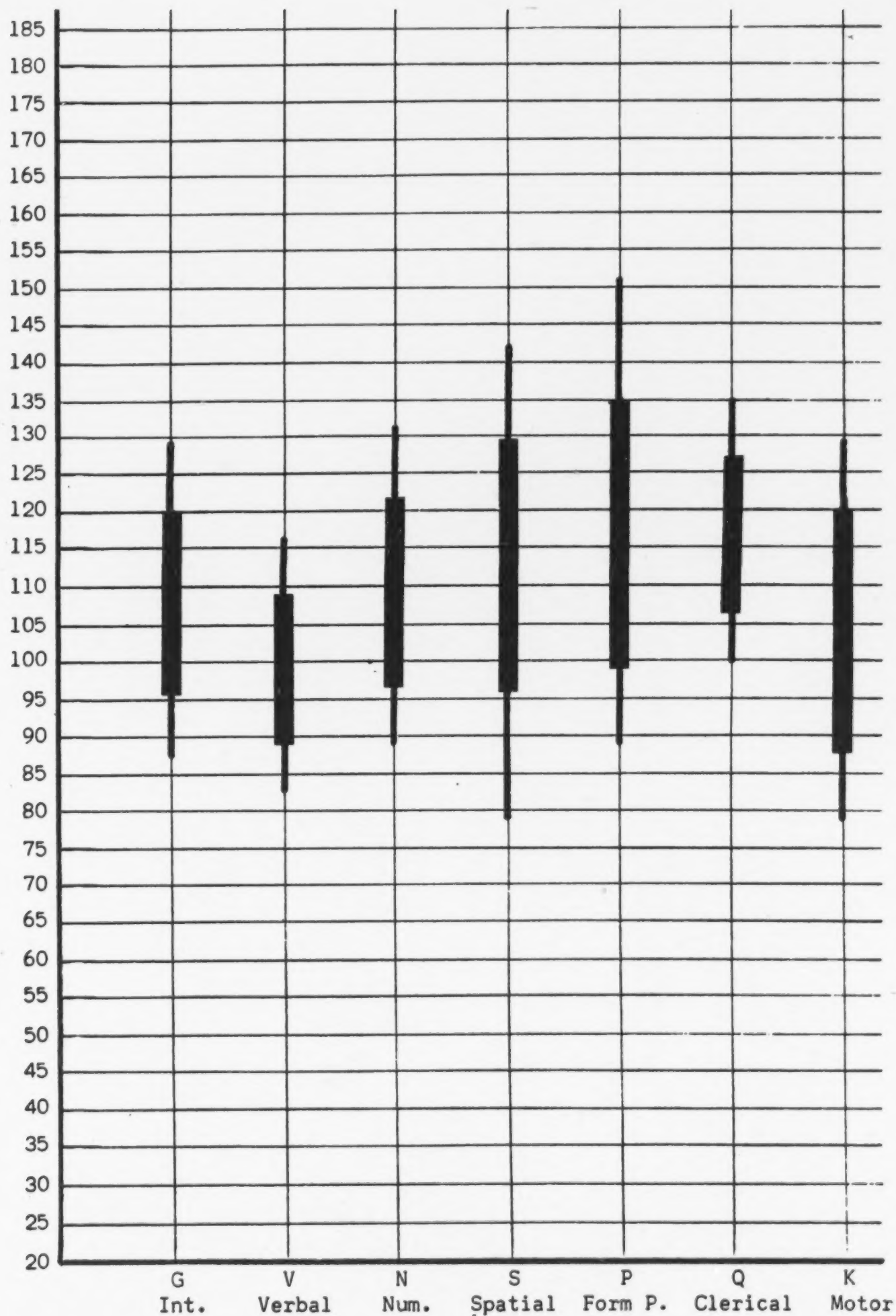
-34-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 SALES

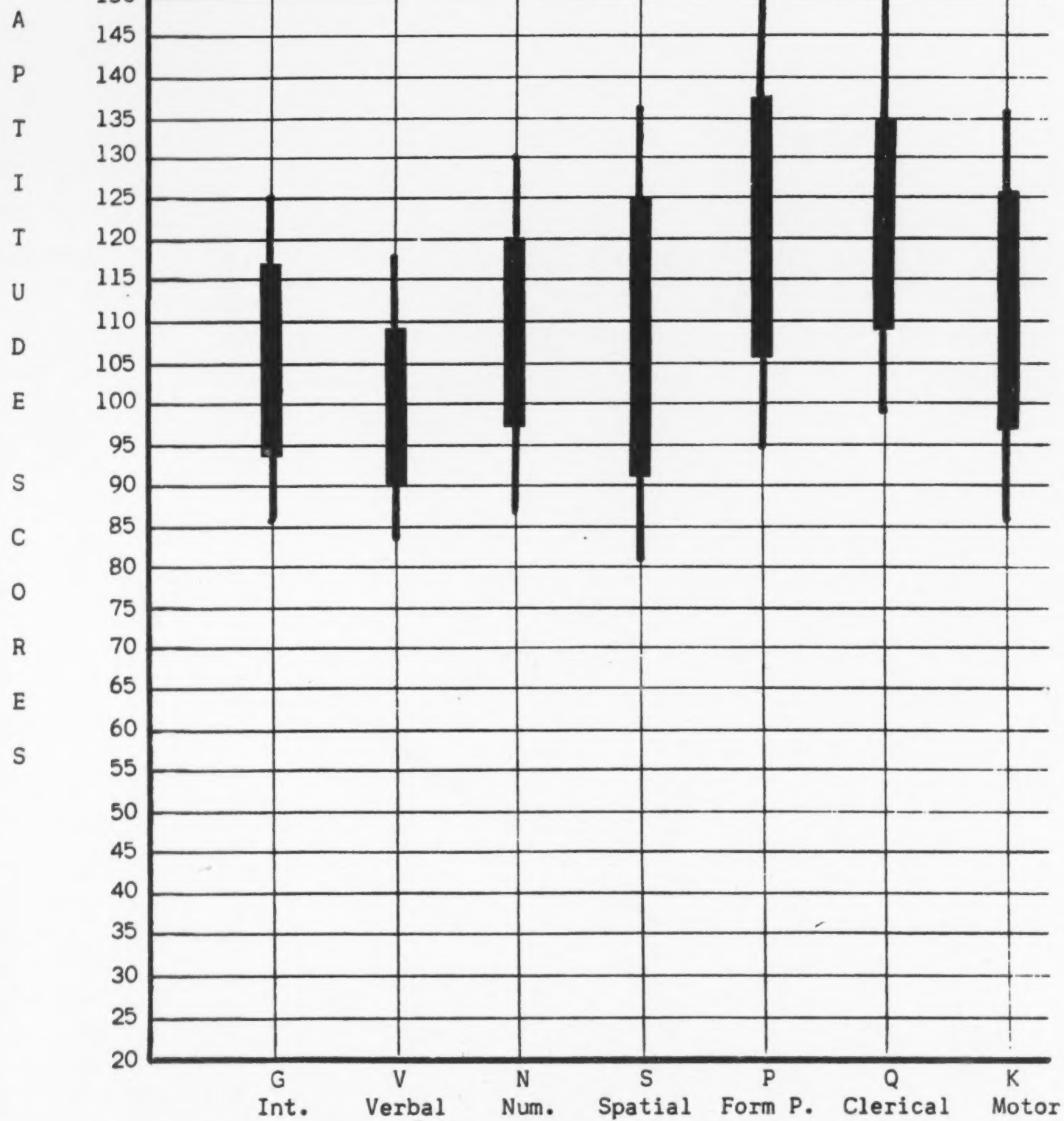
-35-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



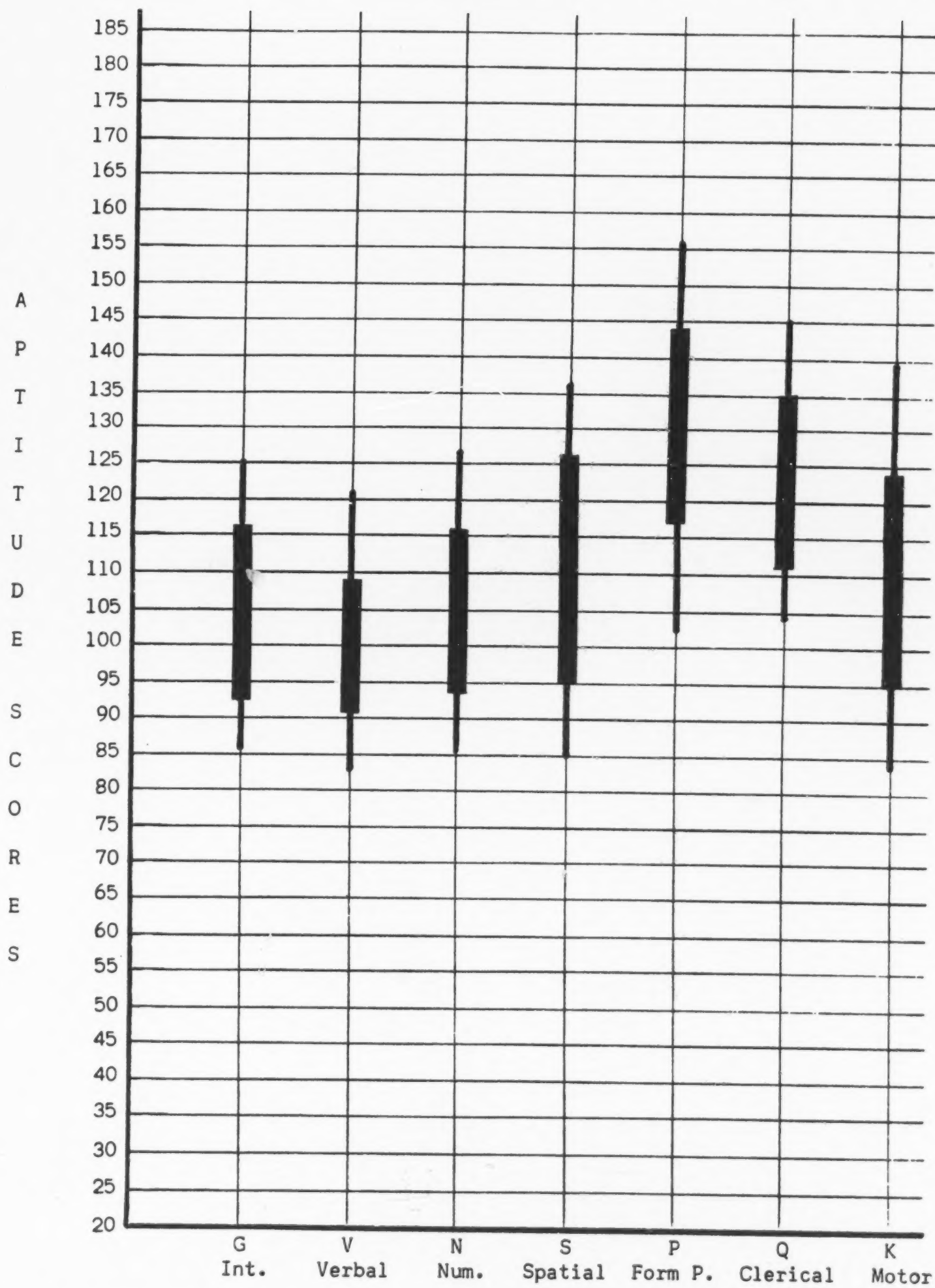
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 CLERICAL TRAINING

-36-



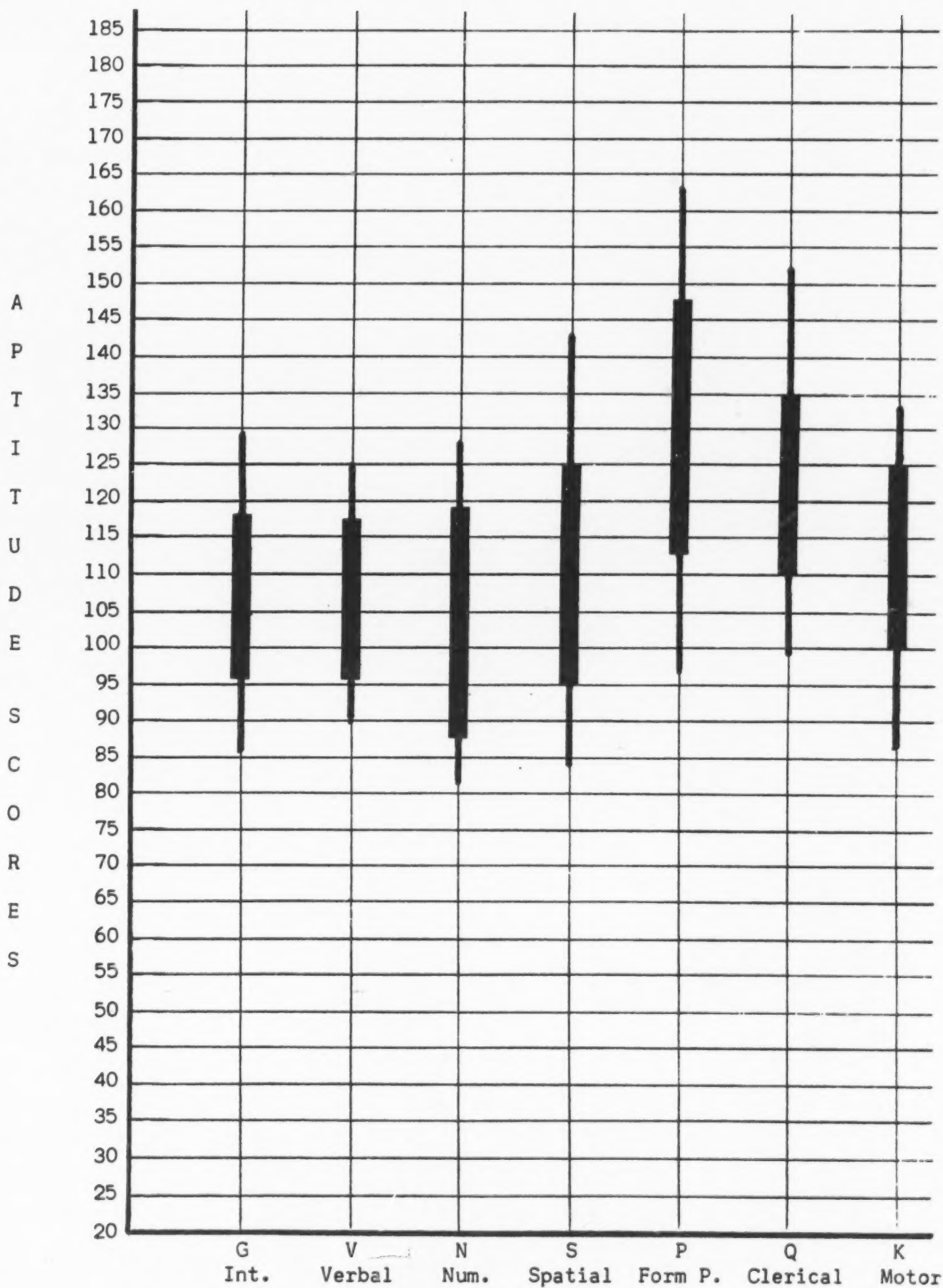
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 COSMETOLOGY

-37-



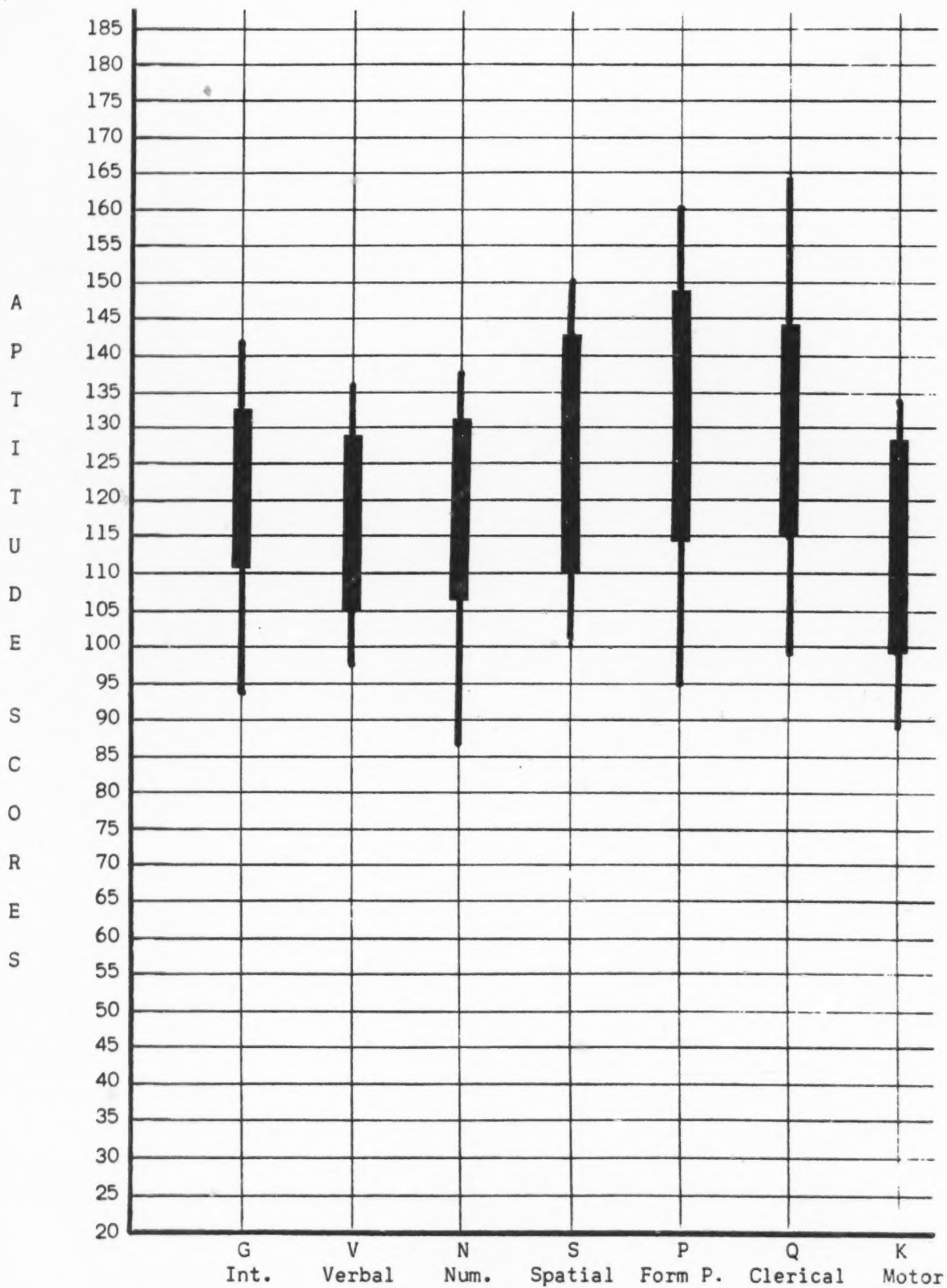
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 DENTAL ASSISTANT

-38-



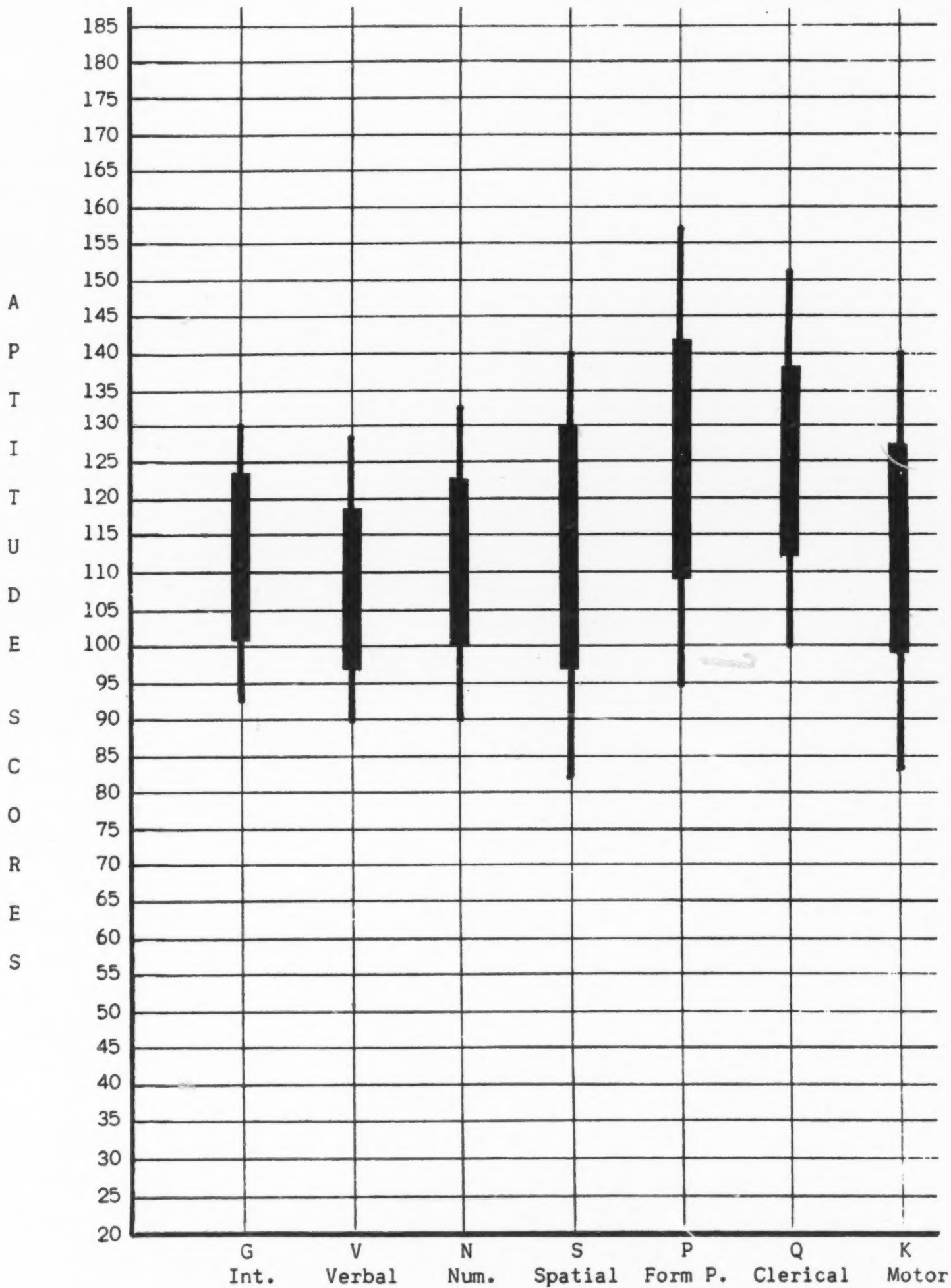
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 MEDICAL LABORATORY ASSISTANT

-39-



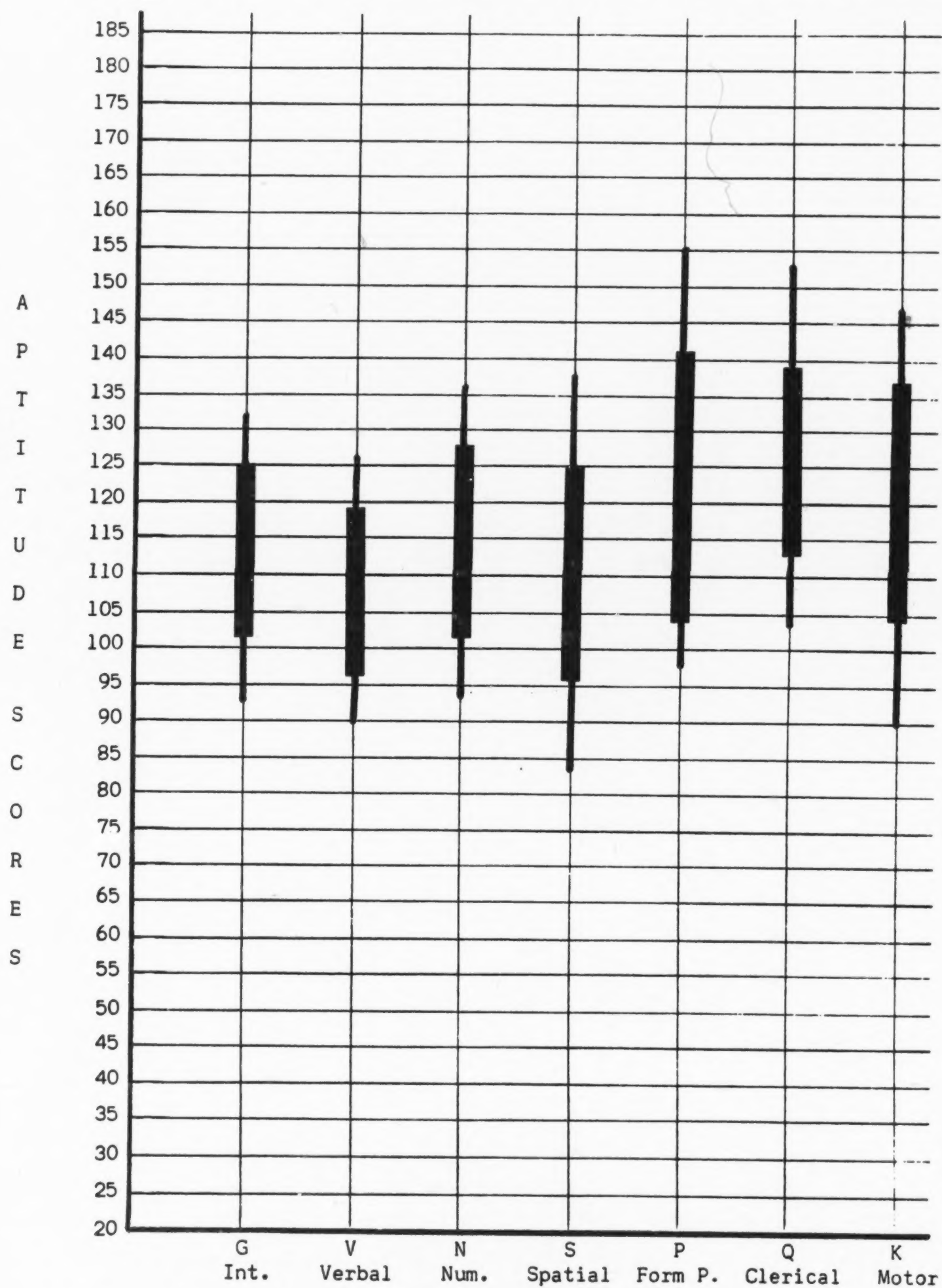
PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 PRACTICAL NURSING

-40-



PROJECT MINI-SCORE TRAINING SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 SECRETARIAL TRAINING

-41-



APPENDIX C

APTITUDE SCORE PROFILES,  
EMPLOYMENT SUCCESS NORMS

CLUSTER I

| PRIMARYLY MALE CURRICULA                 | Page |
|------------------------------------------|------|
| Automotive. . . . .                      | 43   |
| Carpentry . . . . .                      | 44   |
| Electronics . . . . .                    | 45   |
| Power and Home Electricity. . . . .      | 46   |
| Machine Shop. . . . .                    | 47   |
| Mechanical Drafting and Design . . . . . | 48   |
| Welding . . . . .                        | 49   |

CLUSTER II

CURRICULA WITH BOTH MALE AND FEMALE

|                           |    |
|---------------------------|----|
| Accounting. . . . .       | 50 |
| Data Processing . . . . . | 51 |

CLUSTER III

PRIMARYLY FEMALE CURRICULA

|                               |    |
|-------------------------------|----|
| Clerical Training . . . . .   | 52 |
| Cosmetology . . . . .         | 53 |
| Practical Nursing . . . . .   | 54 |
| Secretarial Training. . . . . | 55 |

PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS

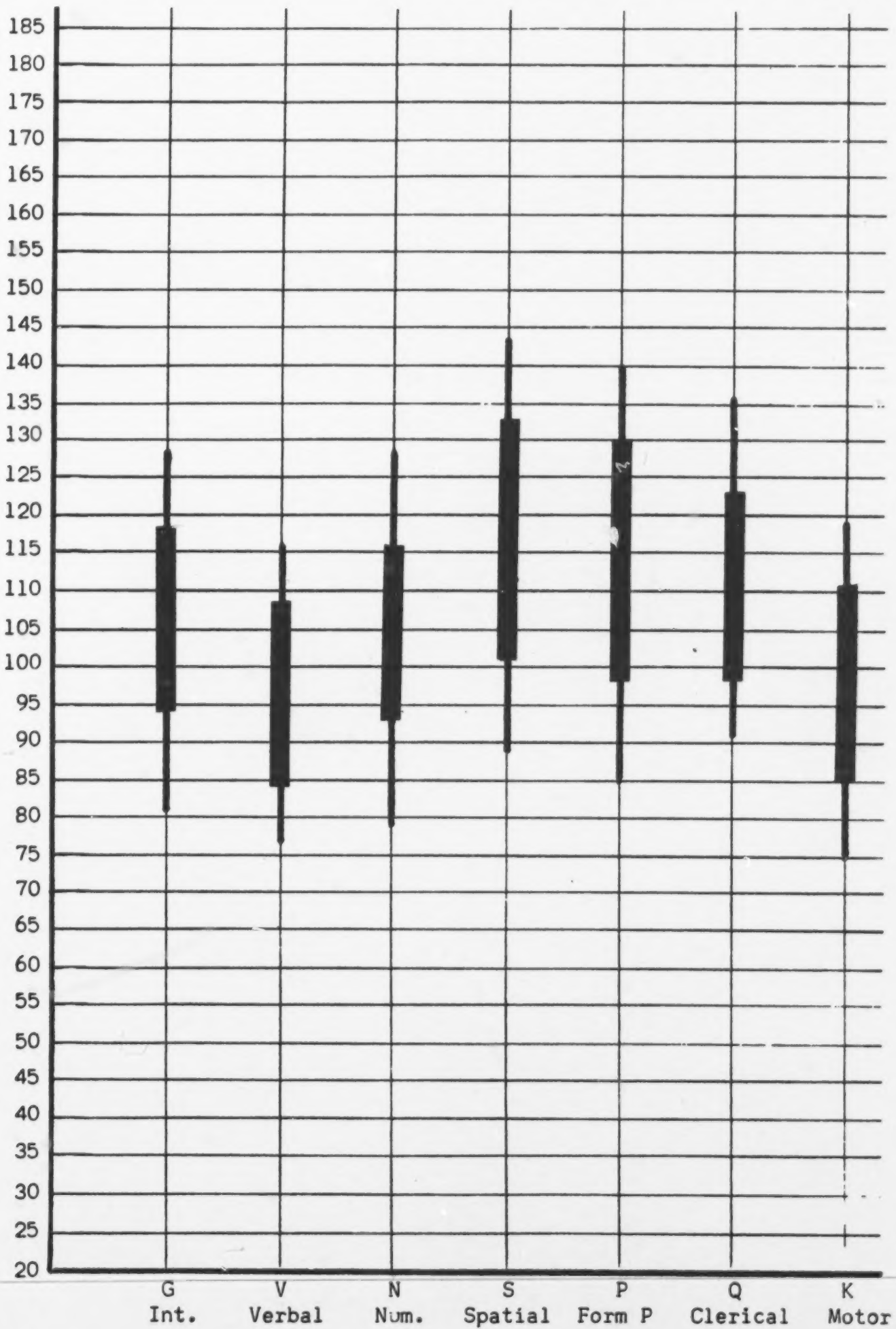
GATB APTITUDE SCORE

PROFILE SHEET

AUTOMOTIVE

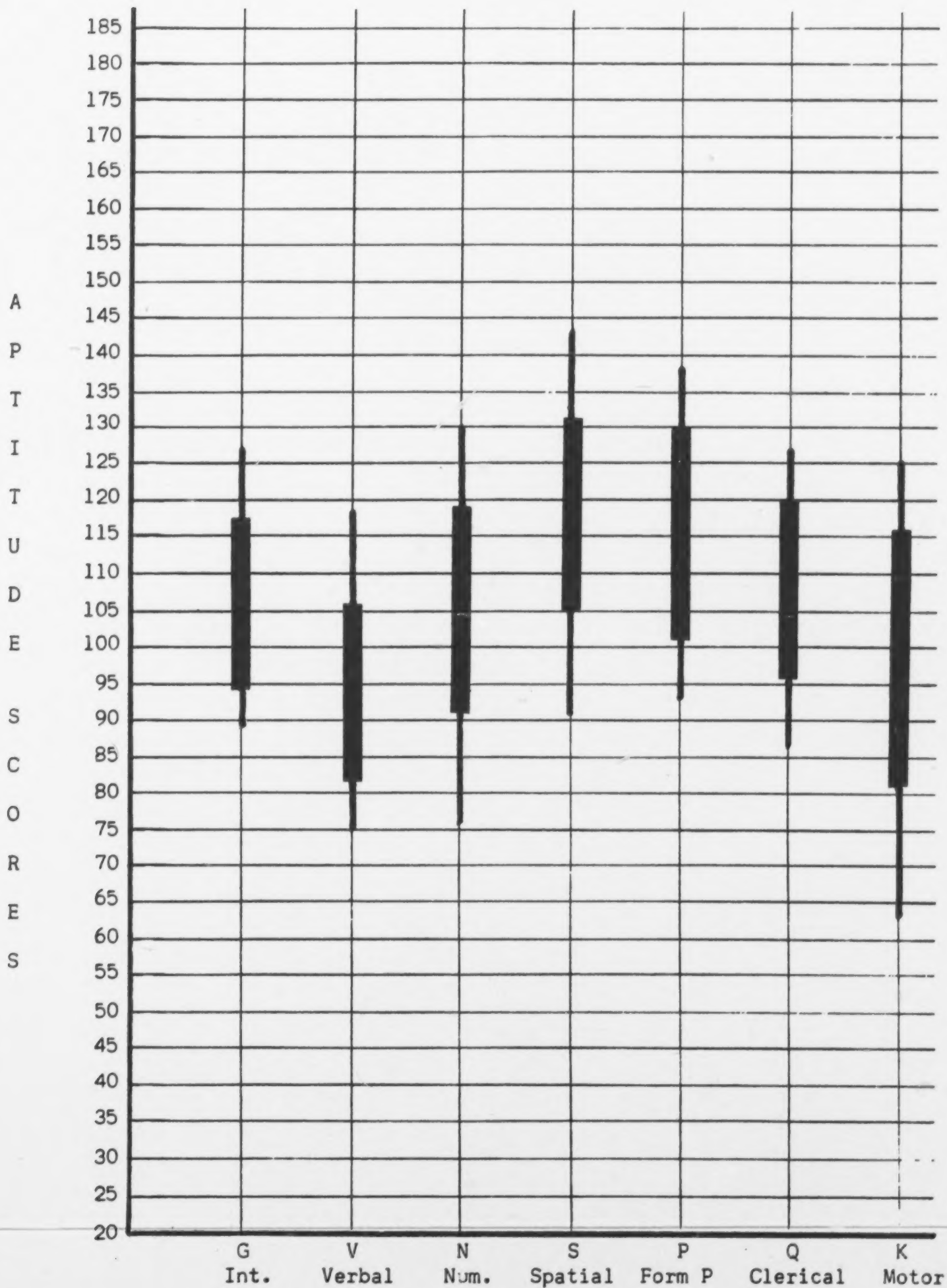
-43-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



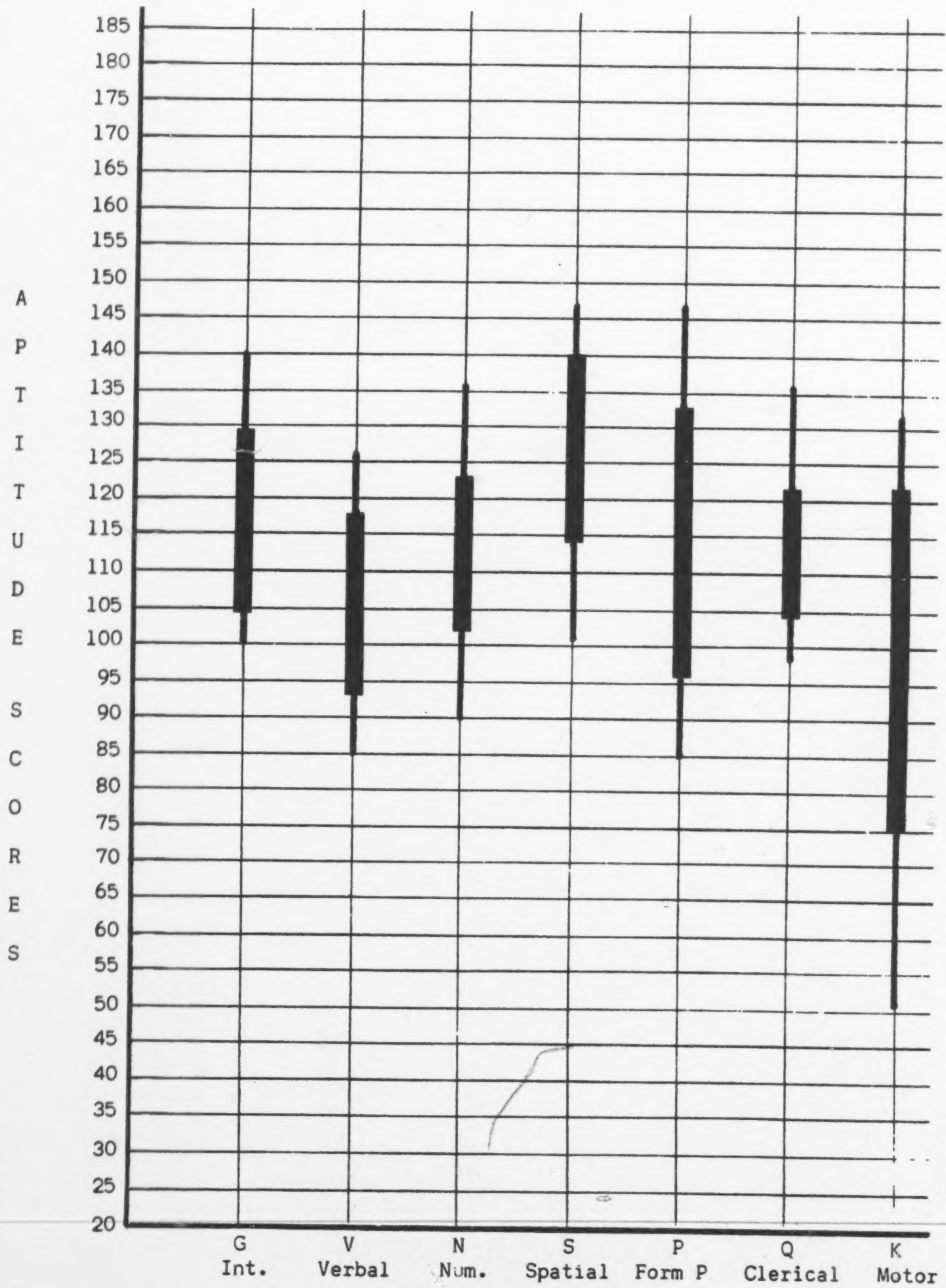
PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 CARPENTRY

-44-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 ELECTRONICS

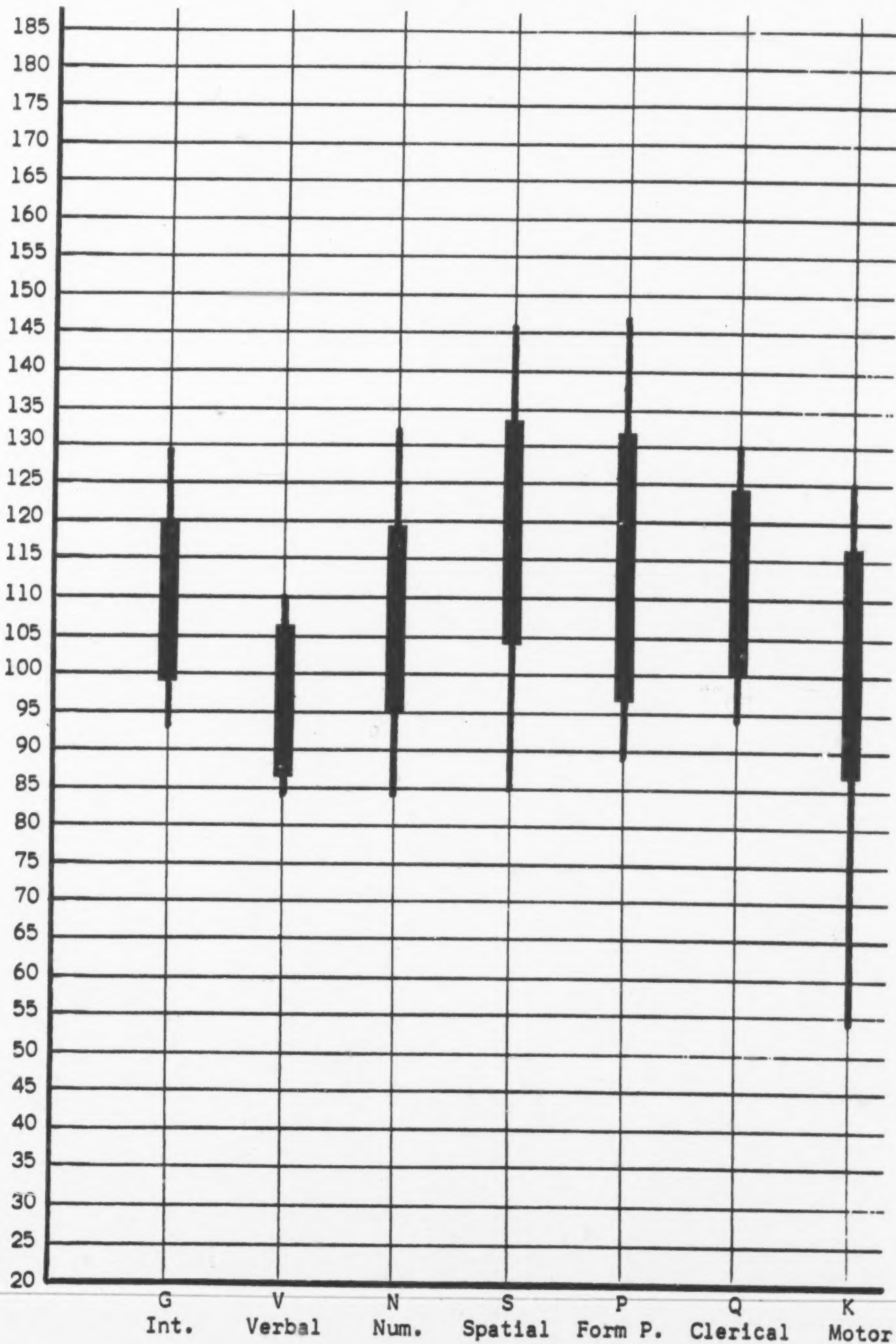
-45-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 POWER AND HOME ELECTRICITY

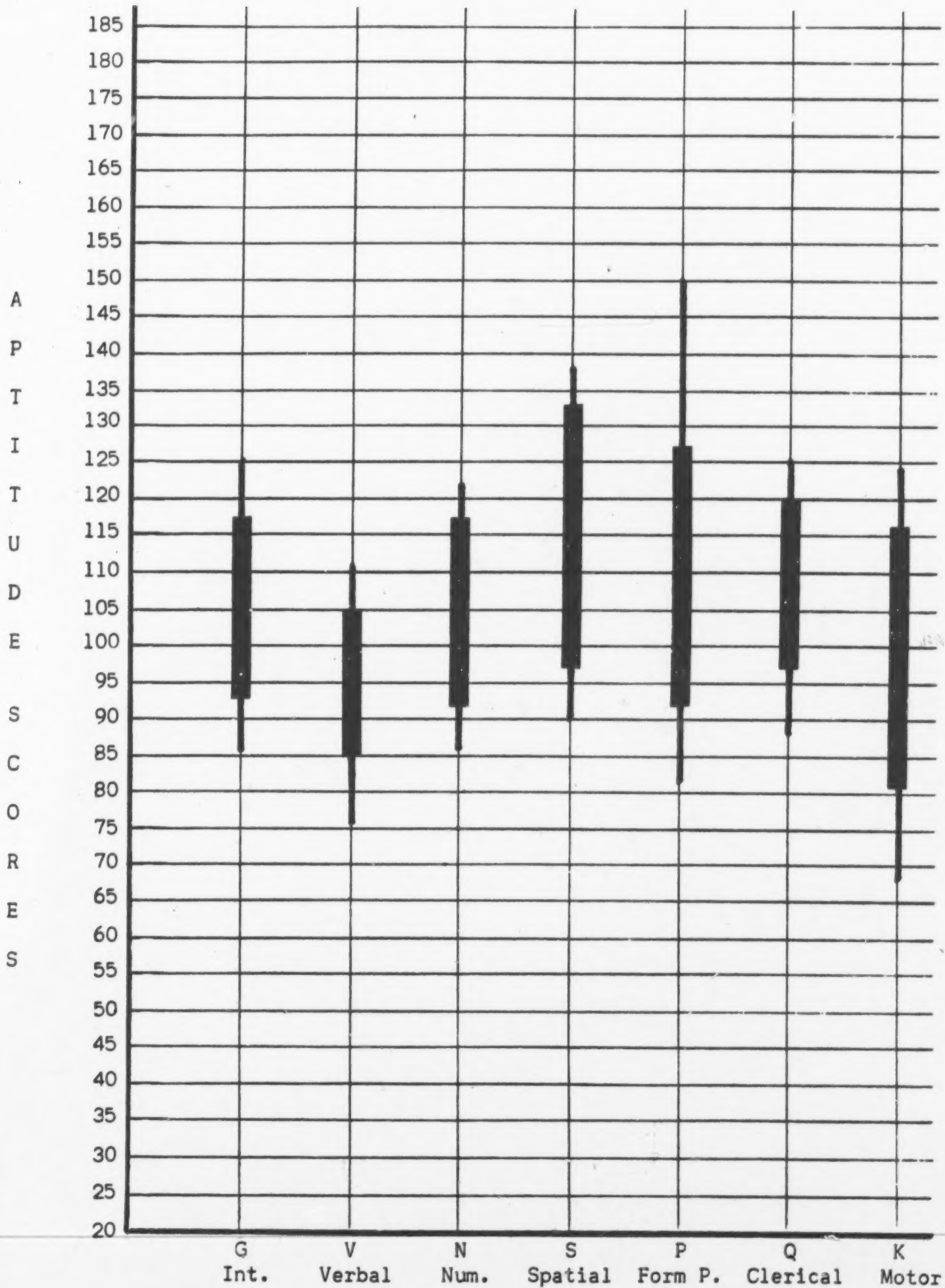
-46-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 MACHINE SHOP

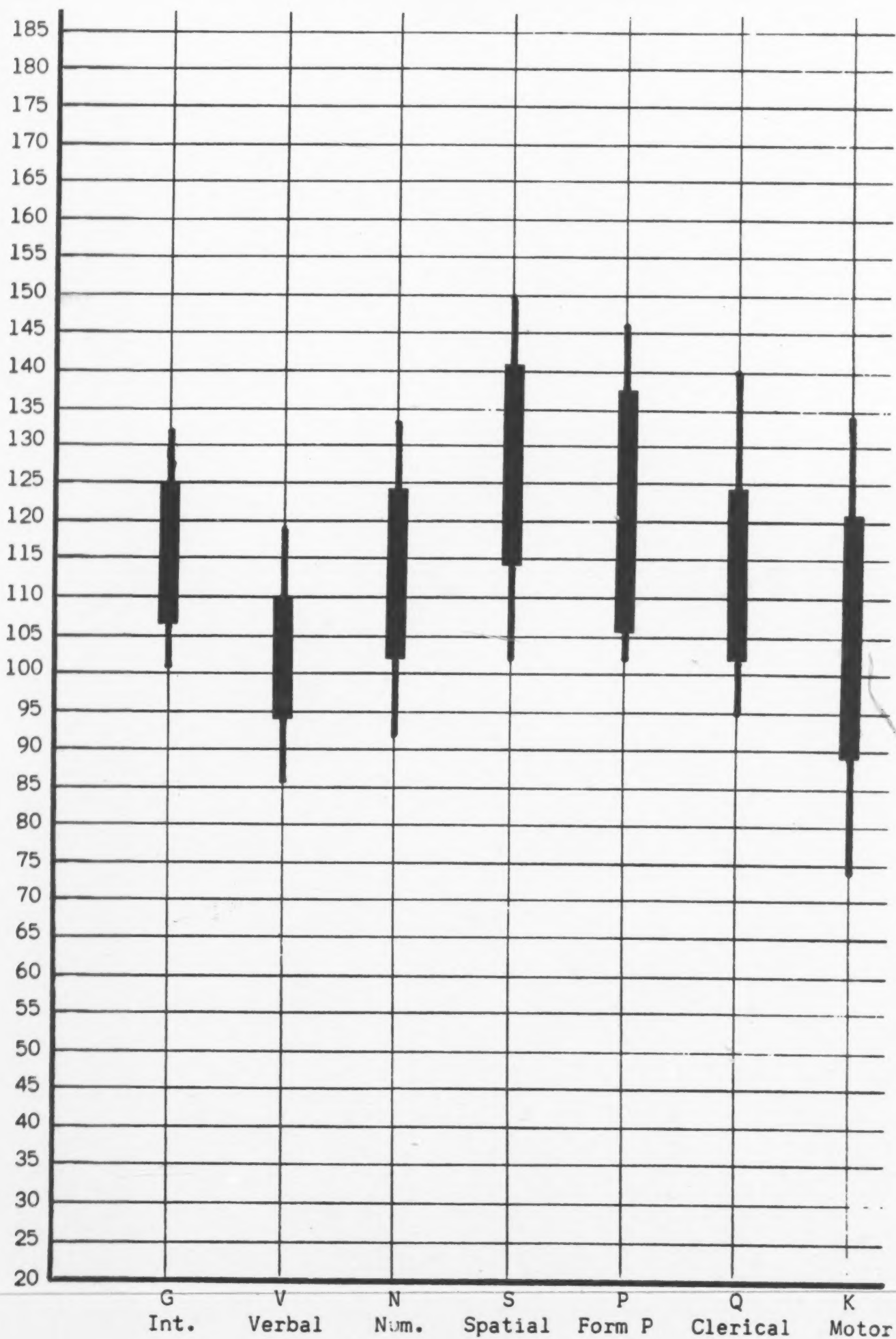
-47-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 MECHANICAL DRAFTING AND DESIGN

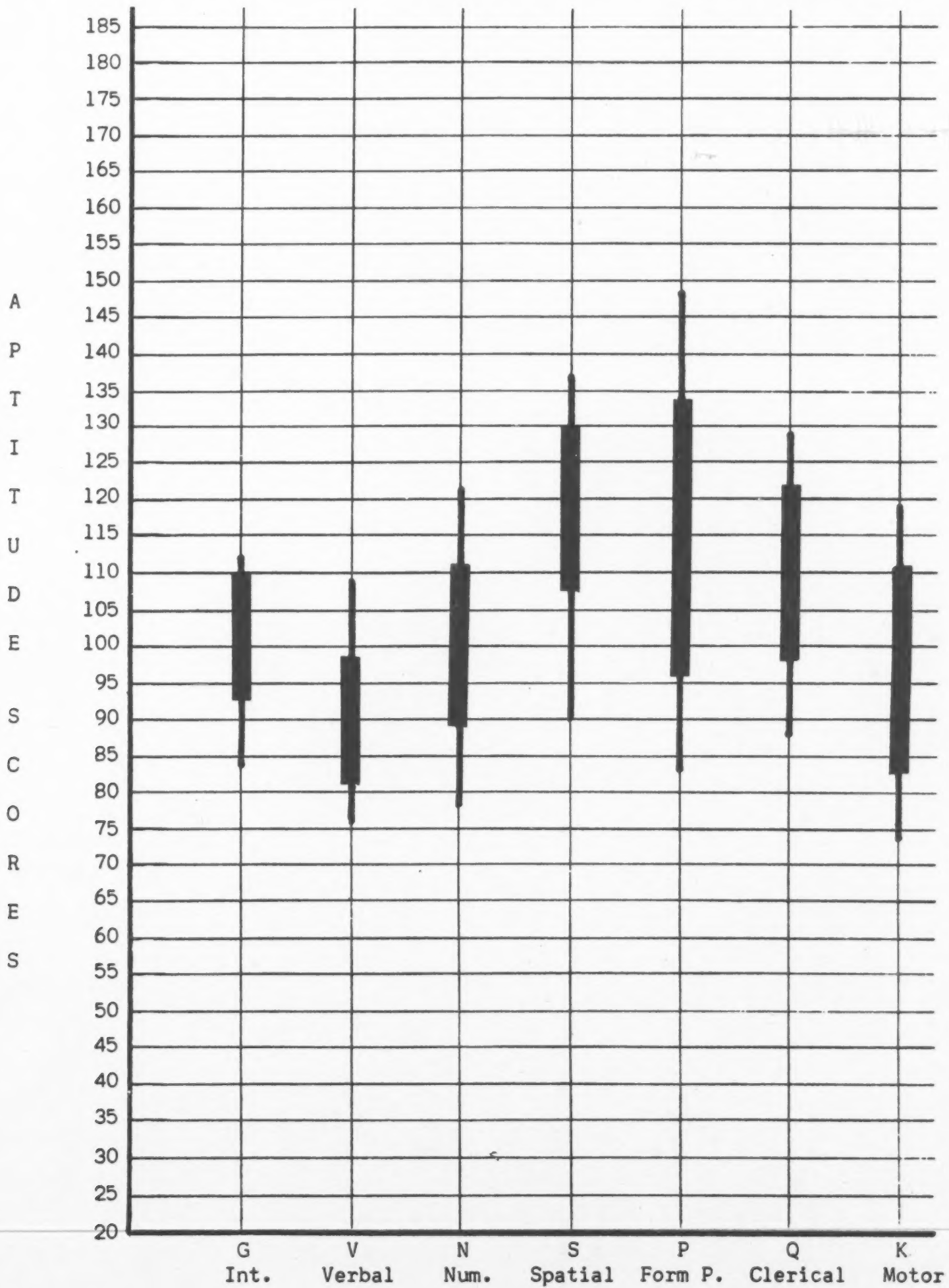
-48-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 WELDING

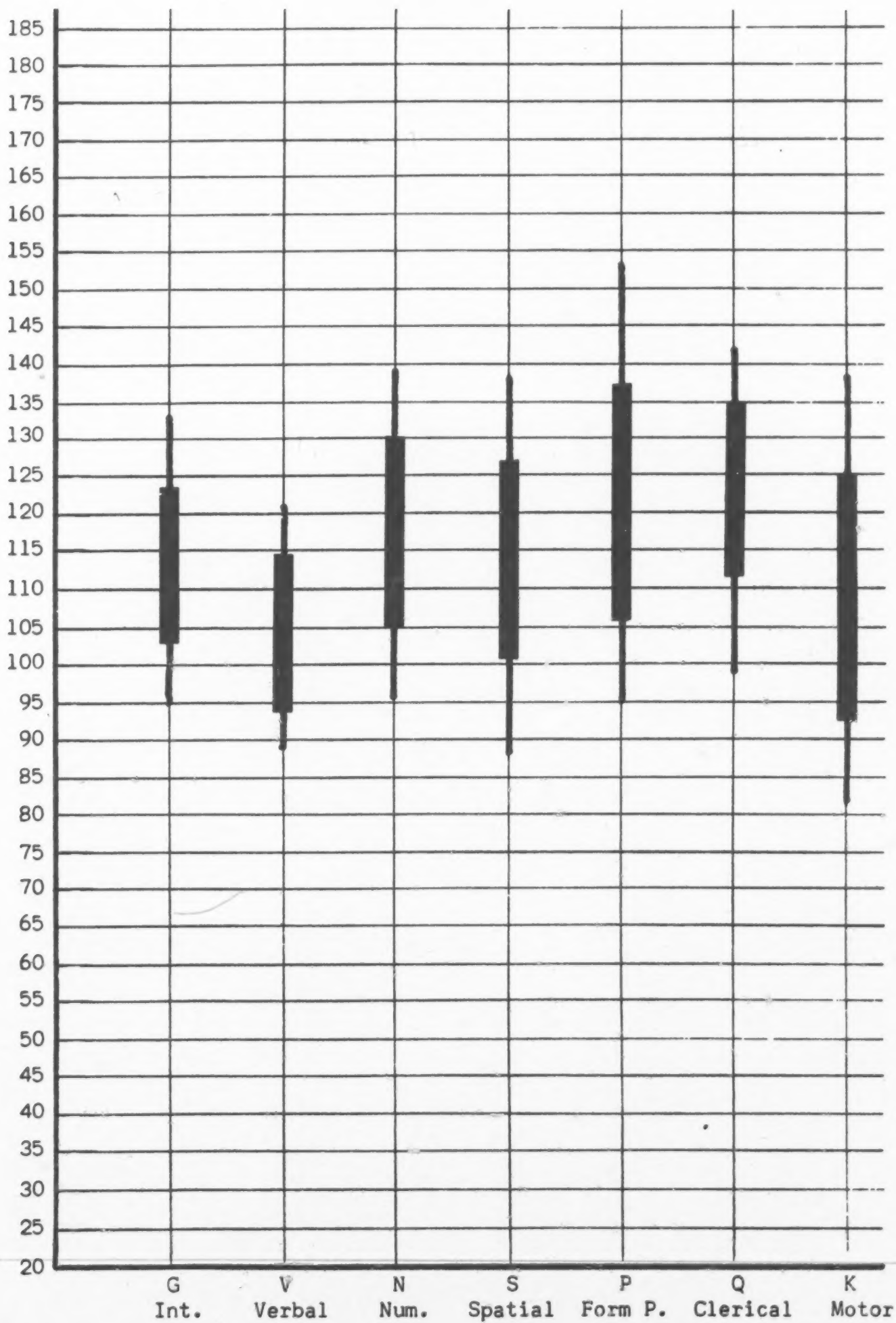
-49-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 ACCOUNTING

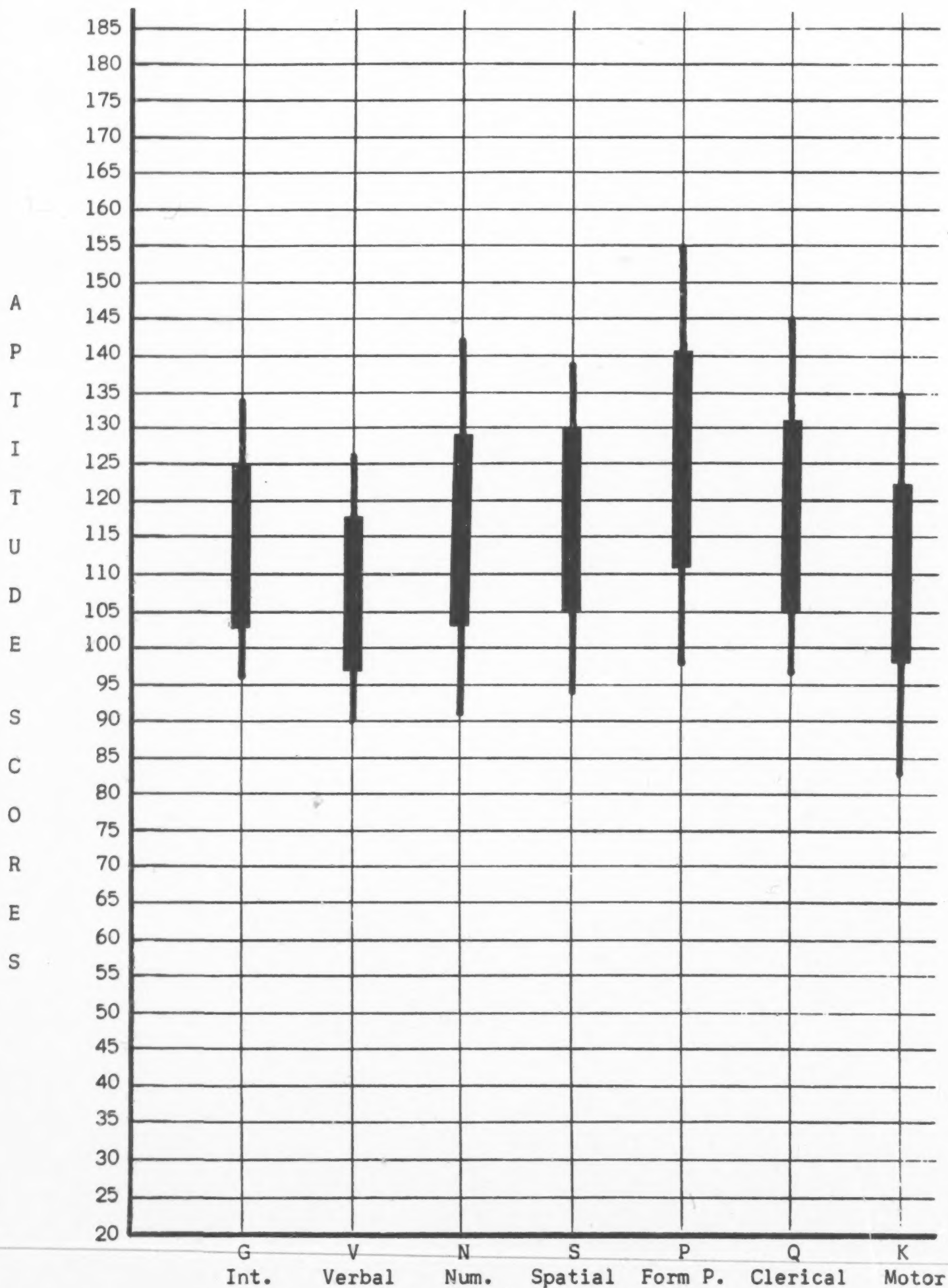
-50-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



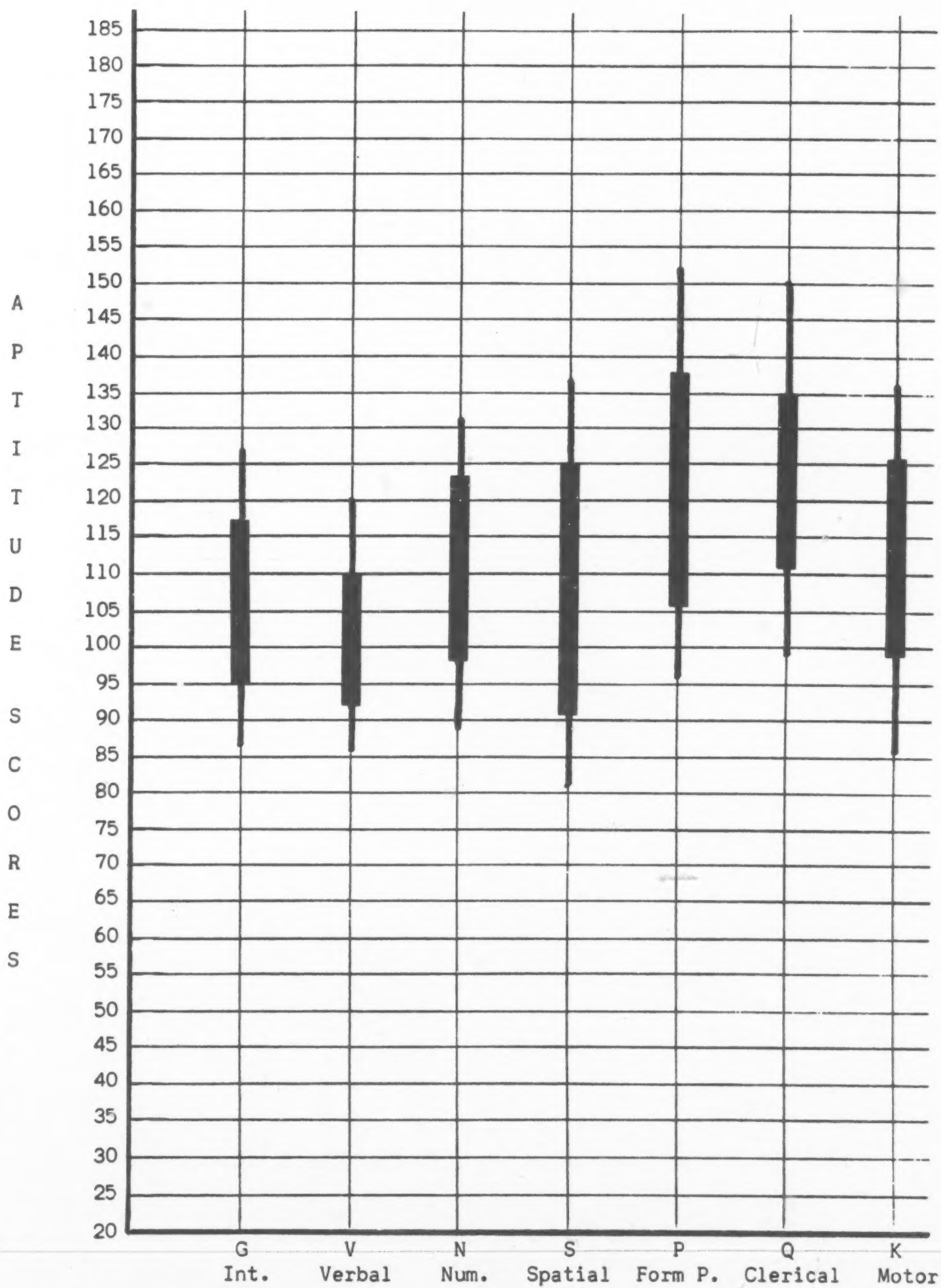
PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 DATA PROCESSING

-51-



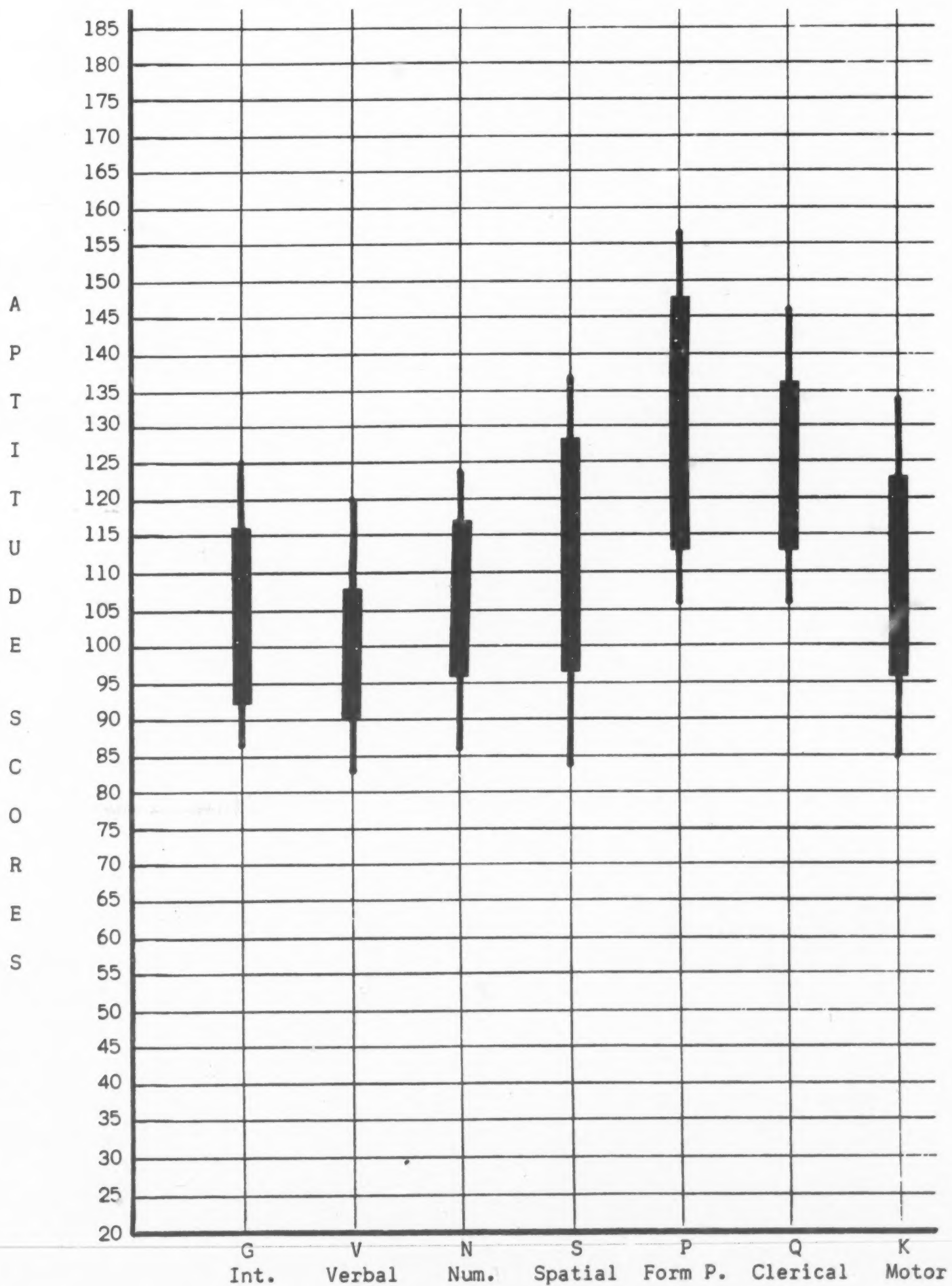
PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 CLERICAL TRAINING

-52-



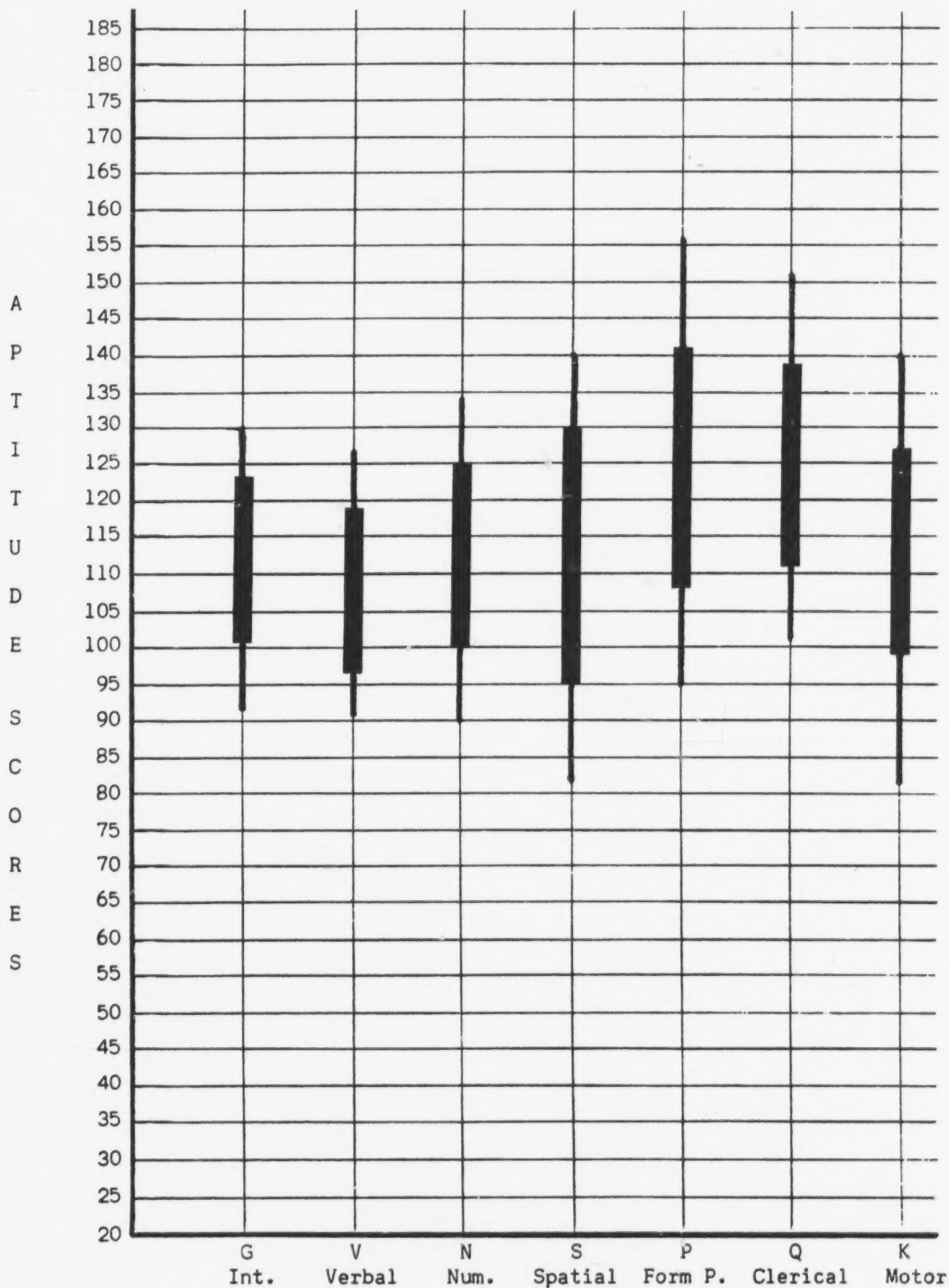
PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 COSMETOLOGY

-53-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 PRACTICAL NURSING

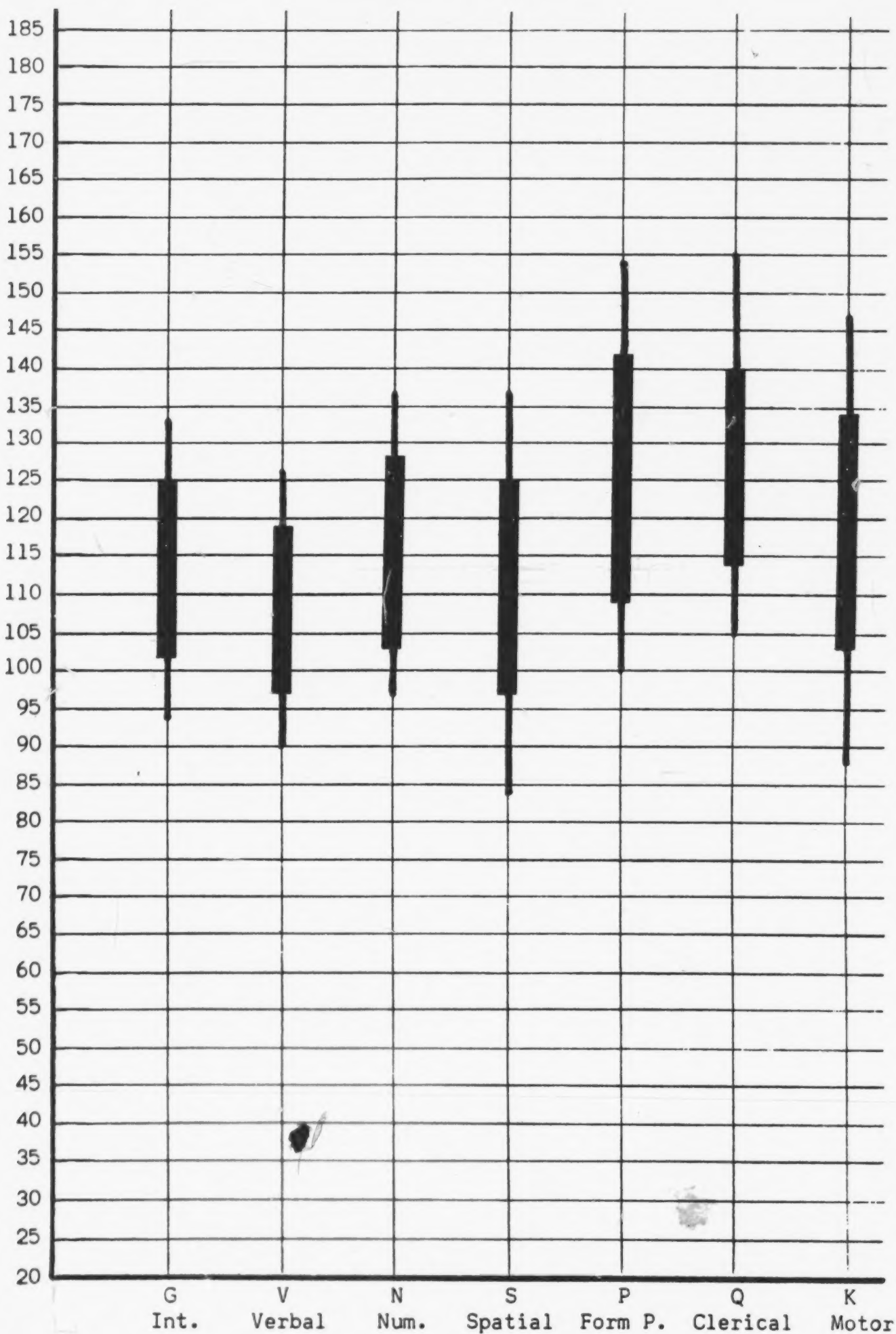
-54-



PROJECT MINI-SCORE EMPLOYMENT SUCCESS NORMS  
 GATB APTITUDE SCORE  
 PROFILE SHEET  
 SECRETARIAL TRAINING

-55-

A  
P  
T  
I  
T  
U  
D  
E  
S  
C  
O  
R  
E  
S



APPENDIX D

APTITUDE SCORE MEANS, STANDARD DEVIATIONS AND NUMBER  
OF OBSERVATIONS FOR GROUPS USED IN PREPARING  
TRAINING SUCCESS NORMS

PRIMARILY MALE CURRICULA . . . . . 57

Agri-Technology  
Aircraft Mechanics  
Architectural Drafting  
Automotive  
Carpentry  
Chefs and Cooks  
Diesel Mechanics  
Electronics  
Farm Equipment Mechanics  
Fluid Power Technology  
Machine Shop  
Mechanical Drafting and Design  
Mechanical Refrigeration, Air Conditioning,  
and Appliance Repair  
Plumbing and Sheet Metal  
Power and Home Electricity  
Printing and Graphic Arts  
Welding

CURRICULA WITH BOTH MALE AND FEMALE . . . . . 59

Accounting  
Data Processing  
Interior Design and Sales Assistant  
Sales

PRIMARILY FEMALE CURRICULA . . . . . 59

Clerical Training  
Cosmetology  
Dental Assistant  
Medical Laboratory Assistant  
Practical Nursing  
Secretarial Training

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
TRAINING SUCCESS NORMS

| CURRICULUM                                                        | G Int. |           |       | V Verbal  |       | N Num.    |       | S Spatial |       | P Form P  |       | Q Clerical |       |
|-------------------------------------------------------------------|--------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|------------|-------|
|                                                                   | N      | $\bar{X}$ | S     | $\bar{X}$ | S     | $\bar{X}$ | S     | $\bar{X}$ | S     | $\bar{X}$ | S     | $\bar{X}$  | S     |
| PRIMARYLY MALE CURRICULA                                          |        |           |       |           |       |           |       |           |       |           |       |            |       |
| Agri-Technology                                                   | 115    | 107.71    | 11.96 | 97.54     | 10.31 | 107.74    | 12.66 | 111.77    | 16.40 | 111.98    | 16.53 | 110.65     | 11.24 |
| Aircraft Mechanics                                                | 103    | 111.52    | 10.88 | 101.41    | 9.61  | 105.92    | 11.48 | 122.26    | 14.60 | 119.20    | 15.40 | 112.55     | 11.49 |
| Architectural Drafting                                            | 53     | 111.34    | 10.21 | 99.47     | 10.48 | 105.43    | 12.48 | 126.53    | 12.93 | 126.21    | 18.22 | 114.32     | 15.40 |
| Automotive                                                        | 495    | 106.05    | 12.84 | 96.66     | 10.99 | 103.14    | 13.69 | 117.29    | 17.34 | 114.61    | 17.92 | 110.15     | 12.82 |
| Carpentry                                                         | 181    | 107.02    | 11.95 | 94.95     | 10.59 | 105.12    | 13.56 | 119.29    | 15.51 | 114.52    | 14.70 | 108.13     | 11.37 |
| Chefs and Cooks                                                   | 61     | 100.16    | 16.60 | 95.38     | 12.35 | 99.82     | 17.58 | 106.39    | 19.20 | 111.61    | 17.76 | 109.30     | 12.68 |
| Diesel Mechanics                                                  | 69     | 107.57    | 12.03 | 98.42     | 10.24 | 105.04    | 13.56 | 118.42    | 15.88 | 115.64    | 17.73 | 109.38     | 11.13 |
| Electronics                                                       | 202    | 114.93    | 11.28 | 105.10    | 10.20 | 111.60    | 12.46 | 123.23    | 14.43 | 117.92    | 17.71 | 114.24     | 11.71 |
| Farm Equipment Mechanics                                          | 72     | 107.49    | 11.53 | 96.68     | 8.55  | 107.31    | 13.22 | 115.81    | 17.79 | 115.86    | 17.08 | 109.94     | 12.68 |
| Fluid Power Technology                                            | 51     | 114.51    | 12.41 | 100.49    | 9.63  | 116.33    | 13.24 | 119.04    | 14.27 | 113.86    | 15.53 | 115.31     | 14.51 |
| Machine Shop                                                      | 166    | 107.47    | 11.79 | 96.78     | 10.54 | 106.63    | 14.08 | 117.39    | 15.95 | 114.34    | 17.49 | 109.42     | 11.85 |
| Mechanical Drafting and Design                                    | 251    | 115.16    | 10.46 | 101.88    | 10.22 | 111.80    | 12.16 | 127.50    | 14.32 | 122.55    | 17.34 | 114.90     | 12.57 |
| Mech. Refrig., Air Cond., & Appl. Repair                          | 56     | 104.18    | 12.88 | 95.93     | 11.72 | 102.14    | 12.90 | 111.77    | 17.51 | 112.23    | 14.46 | 110.70     | 13.62 |
| Plumbing and Sheet Metal                                          | 49     | 101.47    | 11.74 | 94.67     | 9.42  | 101.18    | 12.44 | 112.06    | 19.11 | 113.86    | 21.48 | 110.18     | 10.84 |
| Power and Home Electricity                                        | 207    | 107.88    | 12.43 | 97.14     | 10.19 | 106.36    | 13.39 | 117.73    | 17.61 | 115.68    | 18.13 | 110.55     | 11.87 |
| Printing and Graphic Arts                                         | 80     | 107.47    | 10.93 | 99.26     | 12.28 | 105.01    | 12.11 | 117.30    | 18.19 | 118.64    | 17.09 | 112.34     | 10.88 |
| Welding                                                           | 254    | 101.26    | 12.52 | 92.96     | 10.33 | 99.49     | 13.99 | 113.02    | 17.78 | 112.38    | 18.51 | 107.76     | 12.74 |
| $\bar{X}$ = Mean      S = Standard Deviation      N = Sample Size |        |           |       |           |       |           |       |           |       |           |       |            |       |

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
TRAINING SUCCESS NORMS

| CURRICULUM                               | K Motor |           |       |
|------------------------------------------|---------|-----------|-------|
|                                          | N       | $\bar{X}$ | S     |
| PRIMARYLY MALE CURRICULA                 |         |           |       |
| Agri-Technology                          | 115     | 97.07     | 14.93 |
| Aircraft Mechanics                       | 103     | 102.71    | 20.46 |
| Architectural Drafting                   | 53      | 101.40    | 14.51 |
| Automotive                               | 495     | 99.24     | 16.69 |
| Carpentry                                | 181     | 96.56     | 15.70 |
| Chefs and Cooks                          | 61      | 102.33    | 19.15 |
| Diesel Mechanics                         | 69      | 92.62     | 15.30 |
| Electronics                              | 202     | 101.45    | 18.77 |
| Farm Equipment Mechanics                 | 72      | 96.40     | 13.21 |
| Fluid Power Technology                   | 51      | 107.20    | 15.73 |
| Machine Shop                             | 166     | 97.42     | 16.47 |
| Mechanical Drafting and Design           | 251     | 103.59    | 17.54 |
| Mech. Refrig., Air Cond., & Appl. Repair | 56      | 104.80    | 18.27 |
| Plumbing and Sheet Metal                 | 49      | 105.42    | 14.97 |
| Power and Home Electricity               | 207     | 101.66    | 15.74 |
| Printing and Graphic Arts                | 80      | 100.57    | 19.01 |
| Welding                                  | 254     | 98.31     | 15.76 |

$\bar{X}$  = Mean S = Standard Deviation N = Sample Size

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
TRAINING SUCCESS NORMS

| CURRICULUM                                                                                        | G Int. |           | V Verbal |           | N Num. |           | S Spatial |           | P Form P. |           | Q Clerical |           |       |
|---------------------------------------------------------------------------------------------------|--------|-----------|----------|-----------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-------|
|                                                                                                   | N      | $\bar{X}$ | S        | $\bar{X}$ | S      | $\bar{X}$ | S         | $\bar{X}$ | S         | $\bar{X}$ | S          | $\bar{X}$ | S     |
|                                                                                                   |        |           |          |           |        |           |           |           |           |           |            |           |       |
| CURRICULA WITH BOTH MALE AND FEMALE                                                               |        |           |          |           |        |           |           |           |           |           |            |           |       |
| Accounting                                                                                        | 398    | 113.52    | 11.43    | 103.02    | 10.48  | 116.78    | 12.38     | 114.38    | 16.20     | 120.52    | 17.54      | 119.98    | 13.63 |
| Data Processing                                                                                   | 157    | 114.00    | 11.47    | 105.52    | 10.11  | 115.04    | 13.98     | 115.61    | 14.66     | 124.14    | 17.00      | 120.77    | 14.49 |
| Interior Design & Sales Assistant                                                                 | 54     | 109.65    | 10.65    | 102.72    | 10.08  | 103.41    | 13.00     | 127.13    | 13.53     | 128.62    | 18.35      | 119.81    | 16.23 |
| Sales                                                                                             | 108    | 108.22    | 12.53    | 99.89     | 10.12  | 109.04    | 12.89     | 113.67    | 17.78     | 118.29    | 18.38      | 116.03    | 11.14 |
| PRIMARILY FEMALE CURRICULA                                                                        |        |           |          |           |        |           |           |           |           |           |            |           |       |
| Clerical Training                                                                                 | 551    | 105.19    | 11.80    | 100.27    | 10.09  | 107.98    | 12.98     | 109.26    | 16.68     | 121.95    | 17.06      | 121.50    | 14.31 |
| Cosmetology                                                                                       | 249    | 105.61    | 11.72    | 100.53    | 10.54  | 105.42    | 12.18     | 112.64    | 15.80     | 128.27    | 16.23      | 122.93    | 12.74 |
| Dental Assistant                                                                                  | 52     | 107.60    | 11.97    | 105.98    | 11.71  | 105.46    | 14.99     | 111.42    | 16.05     | 129.90    | 18.03      | 122.92    | 14.05 |
| Medical Lab Assistant                                                                             | 49     | 121.29    | 13.54    | 116.33    | 12.19  | 117.24    | 13.64     | 127.71    | 15.14     | 131.73    | 20.72      | 128.92    | 17.46 |
| Practical Nursing                                                                                 | 509    | 111.33    | 11.47    | 107.36    | 11.33  | 111.00    | 12.47     | 113.43    | 16.88     | 125.77    | 17.58      | 125.06    | 14.95 |
| Secretarial Training                                                                              | 739    | 112.37    | 11.78    | 107.23    | 11.09  | 114.15    | 13.02     | 112.13    | 15.38     | 125.23    | 16.67      | 126.49    | 14.48 |
| $\bar{X}$ = Mean                      S = Standard Deviation                      N = Sample Size |        |           |          |           |        |           |           |           |           |           |            |           |       |

$\bar{X}$  = Mean

S = Standard Deviation

N = Sample Size

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
TRAINING SUCCESS NORMS

| CURRICULUM | K Motor |   |   |
|------------|---------|---|---|
|            | N       | X | S |

CURRICULA WITH BOTH MALE AND FEMALE

|                                   |     |        |       |
|-----------------------------------|-----|--------|-------|
| Accounting                        | 398 | 107.18 | 17.56 |
| Data Processing                   | 157 | 108.16 | 15.37 |
| Interior Design & Sales Assistant | 54  | 108.85 | 16.97 |
| Sales                             | 108 | 104.28 | 15.32 |

PRIMARILY FEMALE CURRICULA

|                       |     |        |       |
|-----------------------|-----|--------|-------|
| Clerical Training     | 551 | 111.25 | 15.64 |
| Cosmetology           | 249 | 109.82 | 16.11 |
| Dental Assistant      | 52  | 113.29 | 13.63 |
| Medical Lab Assistant | 49  | 114.39 | 15.71 |
| Practical Nursing     | 509 | 112.51 | 17.55 |
| Secretarial Training  | 739 | 117.94 | 17.94 |

$\bar{X}$  = Mean                      S = Standard Deviation  
N = Sample Size

APPENDIX E

APTITUDE SCORE MEANS, STANDARD DEVIATIONS AND NUMBER  
OF OBSERVATIONS FOR GROUPS USED IN PREPARING  
EMPLOYMENT SUCCESS NORMS

PRIMARILY MALE CURRICULA . . . . . 63

Automotive  
Carpentry  
Electronics  
Machine Shop  
Mechanical Drafting & Design  
Power and Home Electricity  
Welding

CURRICULA WITH BOTH MALE AND FEMALE . . . . . 64

Accounting  
Data Processing

PRIMARILY FEMALE CURRICULA . . . . . 64

Clerical Training  
Cosmetology  
Practical Nursing  
Secretarial Training

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
EMPLOYMENT SUCCESS NORMS

| CURRICULUM                          | G Int. |           | V verbal |           | N Num. |           | S Spatial |           | P Form P. |           | Q Clerical |           |       |
|-------------------------------------|--------|-----------|----------|-----------|--------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-------|
|                                     | N      | $\bar{X}$ | S        | $\bar{X}$ | S      | $\bar{X}$ | S         | $\bar{X}$ | S         | $\bar{X}$ | S          | $\bar{X}$ | S     |
| PRIMARYLY MALE CURRICULA            |        |           |          |           |        |           |           |           |           |           |            |           |       |
| Automotive                          | 130    | 106.53    | 13.59    | 95.58     | 11.06  | 104.70    | 14.08     | 118.88    | 16.35     | 114.92    | 16.68      | 111.21    | 13.31 |
| Carpentry                           | 64     | 106.61    | 11.90    | 94.28     | 11.50  | 105.19    | 13.99     | 119.22    | 14.70     | 116.08    | 13.81      | 107.64    | 12.29 |
| Electronics                         | 51     | 115.55    | 12.08    | 105.20    | 12.03  | 111.43    | 12.14     | 124.82    | 12.95     | 115.37    | 18.81      | 113.27    | 10.77 |
| Machine Shop                        | 68     | 105.65    | 12.06    | 94.74     | 10.27  | 105.31    | 12.55     | 115.22    | 16.63     | 111.71    | 19.43      | 108.34    | 12.03 |
| Mechanical Drafting & Design        | 82     | 115.93    | 9.62     | 102.24    | 10.11  | 113.09    | 12.67     | 126.59    | 14.54     | 122.43    | 14.84      | 114.26    | 11.30 |
| Power and Home Electricity          | 87     | 108.06    | 11.53    | 97.09     | 8.92   | 106.41    | 13.28     | 119.13    | 15.92     | 116.31    | 17.76      | 111.87    | 11.77 |
| Welding                             | 51     | 101.76    | 9.48     | 91.18     | 8.75   | 99.57     | 12.53     | 117.96    | 13.10     | 113.78    | 18.98      | 108.86    | 13.39 |
| CURRICULA WITH BOTH MALE AND FEMALE |        |           |          |           |        |           |           |           |           |           |            |           |       |
| Accounting                          | 162    | 113.89    | 10.82    | 103.23    | 10.02  | 117.86    | 12.19     | 115.33    | 14.80     | 122.14    | 15.80      | 122.40    | 12.59 |
| Data Processing                     | 65     | 114.98    | 11.94    | 107.02    | 10.47  | 115.11    | 14.22     | 117.66    | 13.23     | 125.71    | 15.74      | 118.05    | 13.88 |
| PRIMARYLY FEMALE CURRICULA          |        |           |          |           |        |           |           |           |           |           |            |           |       |
| Clerical Training                   | 331    | 106.50    | 11.95    | 101.56    | 10.15  | 109.50    | 12.52     | 109.57    | 16.90     | 122.22    | 16.97      | 122.35    | 13.86 |
| Cosmetology                         | 103    | 106.05    | 11.60    | 100.47    | 10.48  | 105.60    | 11.55     | 113.61    | 15.69     | 130.36    | 16.47      | 124.37    | 12.25 |
| Practical Nursing                   | 334    | 111.31    | 11.94    | 107.06    | 11.30  | 111.44    | 13.02     | 112.97    | 17.34     | 125.17    | 17.65      | 124.76    | 15.20 |
| Secretarial Training                | 480    | 112.82    | 11.53    | 107.15    | 11.05  | 115.11    | 12.33     | 112.31    | 15.46     | 126.10    | 16.19      | 127.37    | 14.28 |

$\bar{X}$  = Mean

S = Standard Deviation

N = Sample Size

APTITUDE SCORE MEANS, STANDARD  
DEVIATIONS AND NUMBER OF OBSERVATIONS  
EMPLOYMENT SUCCESS NORMS

| CURRICULUM | N | K Motor   |   |
|------------|---|-----------|---|
|            |   | $\bar{X}$ | S |

PRIMARYLY MALE CURRICULA

|                              |     |        |       |
|------------------------------|-----|--------|-------|
| Automotive                   | 130 | 97.72  | 14.89 |
| Carpentry                    | 64  | 97.27  | 19.58 |
| Electronics                  | 51  | 97.75  | 23.30 |
| Machine Shop                 | 68  | 96.72  | 18.33 |
| Mechanical Drafting & Design | 82  | 105.49 | 17.45 |
| Power and Home Electricity   | 87  | 100.24 | 18.70 |
| Welding                      | 51  | 95.84  | 13.17 |

CURRICULA WITH BOTH MALE AND FEMALE

|                 |     |        |       |
|-----------------|-----|--------|-------|
| Accounting      | 162 | 109.35 | 17.30 |
| Data Processing | 65  | 109.44 | 13.92 |

PRIMARYLY FEMALE CURRICULA

|                      |     |        |       |
|----------------------|-----|--------|-------|
| Clerical Training    | 331 | 111.82 | 15.55 |
| Cosmetology          | 103 | 109.97 | 14.79 |
| Practical Nursing    | 334 | 111.95 | 17.88 |
| Secretarial Training | 480 | 117.49 | 19.13 |

$\bar{X}$  = Mean

N = Sample Size

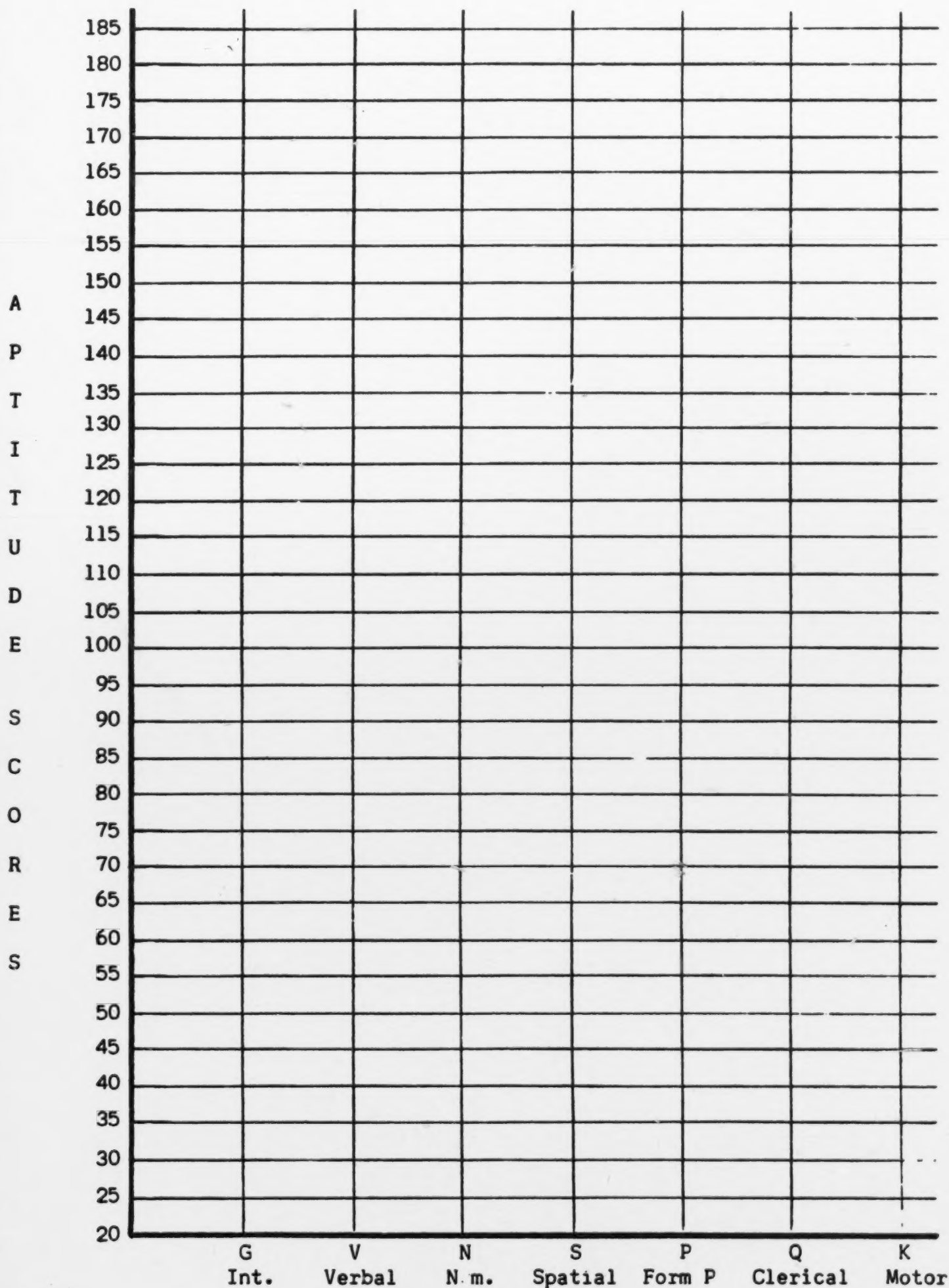
S = Standard Deviation

# STUDENT PROFILE SHEET--GATB APTITUDE SCORE

NAME \_\_\_\_\_ DATE \_\_\_\_\_

-64-

CURRICULUM APPLYING FOR \_\_\_\_\_



OTHER PROJECT MINI-SCORE PUBLICATIONS

1. Nelson, H. F. and Pucel, D. J. Area School Student Selection Project: Selected Descriptive Data Gathered on Approximately 6400 Applicants to the Cooperating Area Vocational-Technical Schools of Minnesota During the Period from October 1, 1966, to July 1, 1967. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1967.
2. Pucel, D. J. "The Centour Methodology Applied to Vocational Student Counseling and Admission." Journal of Industrial Teacher Education, Fall, 1969.
3. Pucel, D. J. The Student: An Integral Part of Vocational Program Development and Evaluation. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969.
4. Pucel, D. J. and Nelson, H. F. Area School Student Selection Project: A Preliminary Look at the Test Battery Data. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1967.
5. Pucel, D. J., Nelson, H. F. and Wheeler, D. N. A Comparison of the Employment Success of Vocational-Technical School Graduates, Drop-Outs, and Persons Not Admitted to Vocational Programs. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1971.
6. Pucel, D. J., Nelson, H. F., and Wheeler, D. N. Differentiating Among Graduates of Vocational-Technical Curriculums. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1970, ERIC 043-757, VT 011-749.
7. Pucel, D. J., and Nelson, H. F. General Aptitude Test Battery (B-1002 Form B) Training Success Norms. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969, ERIC 029-992: VT 008-629.
8. Pucel, D. J., and Nelson, H. F. General Aptitude Test Battery (B-1002 Form B) Training Success Norms Including Supplement One. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1970.
9. Pucel, D. J., and Nelson, H. F. Minnesota Vocational Interest Inventory Training Success Norms. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969.
10. Pucel, D. J., and Nelson, H. F. Minnesota Vocational Interest Inventory Training Success Norms Including Supplement One. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1970, ERIC 042-025; VT 011-393.
11. Pucel, D. J., and Nelson, H. F. Project MINI-SCORE: An Interim Report, 1966-69, rev. ed. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969.

12. Pucel, D. J., and Nelson, H. F. Project MINI-SCORE: Some Preliminary Implications for Vocational Guidance. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969, ERIC 025-658; VT 007-582.
13. Pucel, D. J., Nelson, H. F., and Wheeler, D. N. "Questionnaire Follow-Up Returns as a Function of Incentives and Responder Characteristics." Vocational Guidance Quarterly, March, 1971.
14. Pucel, D. J., and Nelson, H. F., and Wheeler, D. N. Questionnaire Follow-Up Returns as a Function of Incentives and Responder Characteristics. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1970, ERIC 037-536; VT 010-042.
15. Pucel, D. J. and Nelson, H. F. What Happens to Graduates of Minnesota's Area Vocational-Technical Schools. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1969.
16. Pucel, D. J., and other. Vocational Maturity and Vocational Training. Minneapolis: Project MINI-SCORE, Department of Industrial Education, University of Minnesota, 1970.

VOLUMES OF PROJECT-MINI SCORE\* FINAL REPORT

PROJECT MINI-SCORE FINAL REPORT

PROJECT MINI-SCORE FINAL TECHNICAL REPORTS:

- Report One - The Ability of Standardized Test Instruments  
to Predict Training Success and Employment Success
- Report Two - The Ability of Standardized Test Instruments to  
Differentiate Membership in Different  
Vocational-Technical Curricula
- Report Three - General Aptitude Test Battery  
Training Success Norms and Employment Success Norms
- Report Four - Minnesota Vocational Interest Inventory  
Training Success Norms and Employment Success Norms
- Report Five - Minnesota Scholastic Aptitude Test and  
Vocational Development Inventory  
Training Success Norms and Employment Success Norms

\*The project was commonly known as Project MINI-SCORE (Minnesota Student Characteristics and Occupational Related Education) but was originally proposed with the formal title: Characteristics of Full-Time Students in Post-Secondary Trade Courses; U.S.O.E. project number HRD 5-0148.